NATIONAL PETROLEUM NEWS

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Government's Relation to the Oil Industry Should Be Cooperative Only

CLEVELAND, O. Sept. 6. PART one of the Federal Oil Conservation Board's complete report, being in the nature of a preliminary statement to the President of the nation's oil resources, was issued today, two other parts are subsequently to be issued.

Reading of the report disposes at once of the rumors that came out from time to time during the months the Board was considering the mass of testimony submitted by leaders of the industry, engineers and geologists, to the effect that drastic methods, probably governmental intervention, would be recommended to assure adequacy of future supplies. The Board cautiously expresses the view that the utmost in precaution must be exercised to provide for the ever increasing demands upon the oil resources; but its opinion is that a policy of cooperation among oil producers and between the governments, federal and state, and the oil industry is the desirable one.

At only one point does the report recommend legislative action. It believes that considerable good can be accomplished in stabilization of oil production and conservation by action by the several states, rather than by the federal government, in freeing operators from the present rules which demand competitive development of fields where there is multiplicity of ownership. Accompanying this, the Board believes, the federal government should enact legislation which would remove from the operator's mind the fear of violating anti-trust laws when he joins with his fellows in proper development of oil fields.

Any state legislation, however, the reports says, should be carefully considered in order that the political rules governing the development and extraction of oil may keep pace with the advances in technical skill. To this end, the Board suggests, lawyers familiar with the business of oil operators should "take the lead in developing the needed line of action in accord with the discoveries of science and changes in engineering practice."

Estimates Present Reserves

THE report, 7500 words long, is abridged here to include the recommendations made by the Board. At the outset an estimate of reserves is made. The Board finds, or rather it says "it has been estimated" that the total present reserves in pumping and flowing wells in the proven sands is about 4½ billion barrels, theoretically but six years supply, although "it cannot be extracted so quickly."

While there has never been any difficulty in finding the new, flush pools which are relied upon so greatly to maintain the needed supply, the Board thinks dependence upon such discovery makes it desirable that "every effort shall be made to secure the maximum amount of oil from the known fields and the most beneficial use of the oil that is produced." On summary the report states:

Historical: In the 67 years since the drilling of the Drake well, more than 680,000 wells have been drilled, of which more than 20 per cent were failures. To the end of June, 1926, more than 9 billion barrels of oil have been produced, of which one-third was brought to the surface in less than five years.

Proved Area: In the United States, the producing and proved area "is asserted to be" in excess of 3 million acres.

Provision for the Future: Supplies of "essential" oil products must come from:

1. The reserves named.
2. Possible discovery of new sands in known fields by deeper drilling.
3. Possible discovery of new fields.
4. Improved methods of recovering a large proportion of oil from sands.
5. Better utilization of crude oils by diversion from less to more essential uses—making gasoline from fuel oil.
6. Better control of flush flow from new fields.
7. Economies of consumption by improved mechanical devices.
8. Supplies of oil from coal and oil shales.
9. Foreign oil fields.

Reserves in Wildcat Areas: "Certain parts of the country are known by their geology to be impossible of appreciable oil production. Such positively barren areas are estimated to aggregate 43 per cent of the total area of the United States. But this does not warrant the assumption that the remaining 1,100,000,000 acres of the country, or any large part of them, will be found oil bearing . . . . no forecast of their importance (new fields to be found in this area) can be given."

Improved Methods of Recovery: Water, air or gas pressure will recover large quantities from known sands over and above estimates which have been made as to the supplies available by present methods. The total would reach 13 billion barrels, 9 billion plus the 4½ billion previously set forth, if the opinion of some authorities is correct that a "second crop" of oil equal to what has already been extracted can be recovered by these restorative agents.

Brief On Utilization

THE Board got into the subject of utilization of crude oil briefly, for this is reserved as the basis for one of the two reports yet to be made. It said that the most essential oil products are lubricants, gasoline and other oils for internal combustion engines. Other uses could be dispensed with and no industrial revolution would occur, the Board says, because other fuels and substitutes could be applied without prohibitive differentials in economic costs. About half the present production of crude oil is burned either as crude or fuel oil to generate steam and for heating. . . . "It seems theoretically pos-

sible to crack 80 per cent of the oil now going into fuel and heat purposes."

"This conversion in itself comprises a potential of assured gasoline supplies," says the Board. "It may be contended that a control of production by which supplies would be reduced would so increase the price as to force the production of gasoline instead of so large a fraction of use as fuel oils. This program, however, raises impossible difficulties in artificially increased prices to the consumer, inability to regulate the flow accurately to the demand, and the ultimate necessity to regulate profits in order to protect the customer."

The Board touched upon the subsidiary phase of conservation by means of better designed engines and expressed an estimate that 25 per cent of the gasoline could be saved and the same mileage provided by better carburetors and engines. Improvement is steadily going on in this respect, however, and "Their improvement will be expedited if there should be a tendency of gasoline prices to rise."

Acquire Foreign Fields

A STRONGLY nationalistic note is sounded, reminiscent of the recent finding of Herbert Hoover, secretary of commerce and a member of the Board, with respect to rubber, in the brief discussion of foreign oil sources. "That our companies should vigorously acquire and explore such fields is of first importance, not only as a source of future supply, but supply under control of our own citizens," the Board says. "Our experience with the exploitation of our consumers by foreign controlled sources of rubber, nitrate, potash and other raw materials should be sufficient warning as to what we may expect if we shall become dependent upon foreign nations for our oil supplies." No comment was made upon governmental policy, present or future, in assisting domestic companies in their efforts to develop foreign fields; however, the foreign situation is to be discussed at length in one of the two reports to be made presently.

The Board finds that only limited reliance is to be placed upon supply of motor fuel from by-product distillation of coal. The most adaptable coals produce about 4½ gallons of light oils and 15 gallons of tar per ton. In 1925 about 146,000,000 gallons of light oils came from coal. The tendency is to increase the distillation but the supply from the whole of the coals best suited for the purpose would not furnish an appreciable substitution of liquid oil supplies. Oil shales and oil sands, however, promise much, form an almost unlimited reserve and their utilization is "solely a question of price."

Program For the Industry

"A PROGRAM was drawn up by the Board as the directions in which industry can contribute to assured future supply. It is set out that the major part of the measures to be adopted in makqing up such assurance must "rest upon the normal commercial initiative of private enterprise. The field for governmental action is considerable, but to formulate the broader by-laws of the industry in the sense of conservation and to concentrate thought upon them, is the major part of the Board's task in cooperation with the industry."

The industry's program, as the Board sees it, is as follows:

1. Continued exploration for extension of known sands and deeper sands in known fields.
2. Continued exploration for new fields.
3. Systematic research and experiment upon methods of securing a larger proportion of the oil from the sands.
4. Systematic research and experiment in new methods and cheapened costs in refining and cracking oils and waste elimination.
5. Cooperative methods in sand development of new fields to prevent wasteful flush flow and overproduction.
6. Research and application by engine builders of more economical use of petroleum products.
7. Expansion of American holdings in foreign oil fields.

And, as for the government itself, it can do these things:

1. Conduct research by the Geological Survey in studies of the accumulation of oil and structure of oil-bearing areas; by the Bureau of Mines in methods of producing and refining, including oil shales; by the Bureau of Standards in constitution and utilization of oil products.
2. More intelligent handling of government controlled oil sources on public and Indian lands.

Partial Text of the Oil Board's Report

THE common right of adjoining owners to reduce to possession respective oil and gas in the pools tapped by wells drilled on their lands should involve some recognition of correlated obligations, so that in the drawing of oil and gas by one owner from the common reservoir the producer should be required to recognize the right of the neighbor to so much of the oil as is withdrawn from underneath his property, less a reasonable allowance for the cost of production, the hazard of the undertaking, and a reasonable profit on the undertaking. The right of the State under its police powers to prevent the action of one owner from working a deprivation of the rights of other owners of a common property and to prevent waste or destruction of the common property by one of the owners, seems reasonably clear.

The right of the State to prevent the waste of natural resources is rendered more important in this matter by the newly discovered or at least more widely recognized facts regarding the role of gas in the oil sands. Gas is more than a commodity of smaller commercial value associated with oil; it is the efficient agent provided by nature for bringing the oil within the reach of man. Dissolved in the oil, the gas makes the oil flow more freely to the well and there forces it upward and the longer the gas is retained in solution, the larger is the recovery of oil. Waste of gas is therefore a double waste, and the impairment of the gas pressure in an oil sand by one owner may prevent his neighbors from recovering any of the oil beneath their land and himself from securing more than a small part of the oil underlying his own land.

The authority of the State to prevent the waste of natural gas has already been declared and it logically applies as well to the dissipation of gas pressure without which great quantities of oil would be entirely wasted. Geologic science and engineering practice as well as economic considerations of waste afford a broad foundation on which to base State legislation.

If the several oil-producing States should protect property rights in oil produced from a common underground supply, it undoubtedly would have some effect in the direction of stabilizing production, of retarding development whenever economic demand does not warrant, and of making the business of oil production more economical. Such legislation, although not directly regulating production, would in part accomplish this by freeing owners and operators from the present pressure of a competitive struggle.

Companies Should Take Lead

THE formulation and adoption of remedial measures permitting a better correlation of underground property rights is all the more urgent in view of the present intense activity of the engineers in perfecting better methods of oil recovery. In order to accomplish something in relieving the pressure of competition before it is too late, it is suggested that the lawyers familiar with the business of the oil operators take the lead in developing the needed line of action in accord with the discoveries of science and changes in engineering practice.

The power of the Federal Government to regulate oil production is doubtless limited to its own oil lands, unless the national defense is imperiled by waste or exhaustion of the oil supply. Here the policy of reservation to meet future Federal requirements has already been established and is being perfected as prompted by increased appreciation of the need and as guided by better understanding of the means to that end. It has been suggested to the Board, however, that the Government's jurisdiction as a sovereign owner of the oil under

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its land may justify and authorize Federal legislation to prohibit adjoining owners from appropriating the oil by means of wells drilled on their property. This suggestion involves many interesting implications concerning State and Federal power, but State legislation for the protection of all owners would be preferable and the Federal authority, if any, should be invoked only when it is clear that the State is unwilling or fails to act, or when Naval reserves are threatened with depletion.

Another avenue of relief is the restriction of development of operation through voluntary agreement of owners. This suggestion is not novel for it has to a limited extent been tested in actual practice and can be discussed in the light of experience. Agreement between neighboring property owners as to the handling of their common property and the protection of their mutual rights is more and more generally recognized as making for economy in development and efficiency in extraction as compared with competitive drilling. Indeed, operators of experience have expressed to the Board the opinion that duplication in drilling and the consequent unnecessary reduction of gas pressure constitute the cause of all waste worth mentioning in the production of oil. The danger that much of the remaining oil will be brought to the surface before either courts or lawmakers can be expected to remedy the situation has also prompted the expression of opinion to the Board that voluntary cooperation offers the only practical hope.

Government Should Remove Barrier

THE question of the legality of cooperative agreements has been frequently raised in the recent discussion of remedial measures. The uncertainty as to whether the economic betterment through substituting cooperation for competition runs counter to Federal and State laws has served as an actual or imagined or pretended barrier to cooperative action and the removal of that legal inhibition is asked, although the suggestion comes from the industry that "to protect the public, approval of such agreements by some commission or board should be required." This doubt should be removed by appropriate legislation.

The voluntary cooperation proposed would need to include the landowners and operators in a single field or pool, which is a relatively small unit of production, so that the possibility of monopolistic control need not be feared. Indeed, cooperative regulation of either the development or the operation of a single pool could control only a small percentage of the country's production. The largest flush pool in recent years—Santa Fe Springs in California—contributed 11 per cent to the output in 1923, and no pool contributed more than 8 per cent to the output of either 1924 or 1925. Indeed, the three exceptional pools last year—Smackover, Arkansas; Long Beach, California; and Tonkawa, Oklahoma—together accounted for only 16 per cent of the country's production. Even the flood of oil from the Cushing pool at the time of its maximum yield in 1914 and 1915 is to be credited with only 17 per cent of the country's production in those years when the total yield was only a third of that of 1925.

In the one instance of cooperative control by the Salt Creek Conservation Committee, the prorating of production in 1922 and 1923 reduced the output to perhaps one-third of the productive capacity of the 600 to 700 wells then producing. The effect of the Committee's restrictions on production was a matter of only 8 or 9 per cent of the country's production of that period.

The question of the country-wide influence of such cooperative action on either supply or price would, moreover, under any legalized procedure, be always subject to "appropriate and adequate governmental scrutiny," quoting from counsel of the American Petroleum Institute, "to the end that these owners might not be stimulated to undue haste and a wasteful competition in the development of their properties and trade, but might have a greater liberty to consult the economic conditions of the industry from time to time."

The test of experience can be applied to the voluntary agreement plan of pool development and operation, for instances can be cited of one-company control of a pool, of coordinated development by a few owners, of community action, and of prorating agreement with later group control.

The "Horrible Example"

AS illustrating the lack of cooperative action, the Santa Fe Springs field of California has been brought to the attention of this Board. In this small but highly productive field, 45 operating companies competed, drilling more wells than necessary, letting loose an unneeded flood of oil on the market, with resultant disaster to the price structure, and creating conditions of increased operating costs. The total losses attributed to this competitive struggle in a single field are estimated as in excess of $200,000,000, but even greater perhaps than this economic waste involving a loss to the industry, is the loss to the country involved in the dissipation of gas pressure, leaving in the upper sands oil that might well have been recovered to an amount equal to that actually taken out under the rush methods of competitive drilling and producing.

In the effort to escape the economic demoralization that has followed the discovery of each of the larger flush pools, attempts at community action have been made. In the Belvedere Gardens area in the Los Angeles Basin, four community leases were negotiated consolidating the oil rights of approximately 2000 individual landowners. Four producing wells only would have been required rather than the possible 2000, following the usual town lot practice, and although oil was not found when the deep test was made, the possibility of a community agreement was proved.

A Voluntarily Controlled Pool

AS an example of coordinated development by agreement, California furnishes the Dominguez field. Here cooperation between the few large operating companies permitted the adoption of a business-like plan, in which slow development and economic well spacing have reduced the number of unremunerative wells, increased the production per well, kept a large proportion of the wells flowing, decreased the cost of operating, permitted the adoption of best methods of lifting, and lengthened the life of the field. Although nearing the end of its third year, this field shows only a gradual decline as compared with other pools in the same State, and in the end this development program will doubtless justify itself in the increased returns.

The Salt Creek field in Wyoming should be referred to as unique among the larger producing fields in its freedom from uneconomic features in the program of development, a freedom due

Index To Coming Meetings

Wisconsin Independent Oil Jobbers Association, Hotel Belmont, Green Bay, Wis., Sept. 15.

Virginia Independent Oil Men's Association, Jefferson Hotel, Richmond, Va., Sept. 15-16.

National Petroleum Association, Hotel Traymore, Atlantic City, Sept. 15, 16 and 17.

Regional meeting, American Association of Petroleum Geologists, Denver, Sept. 21-23. In conjunction with meeting of American Mining Congress, Sept. 20-24.

West Virginia Oil & Natural Gas Association, Parkersburg, W. Va., Sept. 28, 29.

Ohio Gas & Oil Men's Association, annual meeting, Columbus, O.. Oct. 5, 6.

Petroleum Division, American Institute of Mining and Metallurgical Engineers, Tulsa, Oct. 11-14.

National Petroleum Marketers Association, Atlantic City, Oct. 26, 27, 28.

American Oil Men's Association, Congress Hotel, Chicago, Nov. 16, 17 and 18.

American Petroleum Institute, annual meeting, Mayo Hotel, Tulsa, Dec. 7, 8, 9.

Michigan Independent Oil Men's Association, Detroit, Feb. 10 and 11, 1927.

to cooperative effort in which an important factor has been the Federal supervision of operation on Government leases. At the present time, the Salt Creek field furnishes further illustration of conservative development in a program for winning the oil from the lower sands that promises best returns to both the industry and the public. The productive area of the Lakota sand, less than four square miles, includes about 20 separate leases on Federal and State lands, held by three companies but all operated by one company. Twenty-five wells have already been drilled through this sand, with large initial flows, but the only production of oil from the Lakota sand has been that incidental to the drilling in or the subsequent short test of each well. Thirteen other wells have been drilled to the top of this sand, and the number of wells planned will be only sufficient to equalize the royalties to both owners and to private royalty owners, and it is expected that not more than two wells will be drilled to each 40 acres. When the area is thus drilled up, and the market warrants drawing on this new supply of oil, back pressure will be maintained in the effort to obtain the maximum yield, a short test proving the material advantage of this method of conserving the gas. The Government engineer supervising the Federal leases estimates this shut-in capacity at Salt Creek, based on actual tests as slightly over 70,000 barrels, a potential initial daily production in excess of the present production from the upper sands.

The practical worth of cooperation in planning development and in guiding operation is not only proved by experience, but the results of research now in progress point unmistakably to the urgent need of concerted action in development and operation of an oil pool. Recently the Texas Commission in accord with the opinion of the operators has considered the adoption of a general rule governing the use of air pressure in oil wells, action which illustrates the trend toward limitation of individual action so as to promote the common interest. The need of concerted action, whether by State regulation or by voluntary agreement is now well-nigh universally accepted in any program of rejuvenation of a depleted oil pool, and the application of a similar principle to the conservation of gas-pressure in a new oil field as to its restoration in an old field would seem altogether logical and even more desirable.....

Storage Reserve

THE report of the Naval Oil Reserve Commission was made available to the Federal Oil Conservation Board, and, after consideration thereof, the Board concurs in general with the conclusions and recommendation of the Reserve Commission. The Board believes that steps should be taken to put into effect the principal recommendations therein, with such modifications as may be necessary in the light of information obtained subsequent to the submission of the report.

The war-time oil requirements of the Navy in any overseas campaign would probably include the major portion of the whole deep water tonnage under the United States flag. The increasing use of internal combustion engine drives on commercial carriers makes liquid fuel more and more necessary for war-time water transport. The logistic services of the Army and many of its combat weapons, such as tanks, tractor-drawn artillery, and airplanes, are dependent upon petroleum products for fuel and lubrication. Should the oil supply accessible to the United States become exhausted and no satisfactory liquid substitute be developed, it would be necessary to resort to coal for propulsion.

Our entire war-time reserve should not be in the form of refined products placed in tanks, for two reasons. First of all, the future needs of the Army and Navy for petroleum products may be in a ratio quite different from that of present use, and in view of the natural tendency of gasoline or even crude petroleum to waste when held in storage, a better policy is considered to be the storage of the higher grades of fuel oil or topped crude, from which the needed products could be derived.

Further, it is important that there should be an underground reserve in the event that our commercial supply becomes exhausted before that of other nations. This underground reserve should obviously not be drawn upon unless and until other resources become insufficient.

Inquiry Will Continue

THE Board's inquiry will continue a search for pertinent facts. The Government as the largest landowner is committed to practical conservation of irreplaceable raw materials, by the protection of the public estate and the guidance of its development. Especially is such an obligation sacred and inescapable as it concerns the great sources of energy, the coal and petroleum deposits in Government ownership.

State governments should promptly study the economic advantage of cooperative action by land-owners and oil-operators, looking toward sane development of new fields and consider legislation authorizing cooperative agreements, under proper safeguards. And State legislation, with the declared purpose of conservation, should be enacted to stop the waste of gas, the loss of its content of gasoline, and the even greater loss incident to reduction of gas pressure in the oil sands.

There should be active cooperation between the oil-producing States in the study of proposed legislation to the end that uniform laws may be enacted, or even agreements or compacts entered into between the States, subject to ratification by Congress. Even more pronounced should be the cooperation between the State agencies having authority in the regulation of oil and gas production, and the Federal bureaus, whose investigative fields are essentially coterminous with the administrative jurisdiction of the State organizations. Such cooperation would be especially effective in the oil fields of the public-land States where Federal leases and reserves are scientifically supervised by Federal engineers, who can attain best results only with the full cooperation of the State officials. An excellent beginning in this cooperation is already in force.

Cooperation within the industry can affect economies all along the line: in development and production, a better balancing of supply to demand, when and where the oil is needed; in transportation, better planning, thus avoiding cross-hauls of crude and cross-hauls of products; in distribution, less duplication of marketing facilities, which at times even involve an expense equal to the cost of production and refining. Large savings in both production and refining are possible through the general adoption of the best technique already used by the more progressive units.

Cooperation within the industry is recommended in both research and action, in discovering the best practice and in adopting it. Field cooperation between neighboring operators in preserving back pressure and reducing the gas factor is an example of practical conservation, or if it is too late to do this, field cooperation can take the form of building up pressure by artificial means. United and coordinated effort is the method recommended.

The complete organization of cooperative effort is recommended, with simple but effective working units that will insure full contact of the industry with both State and Federal Governments and continuous contact between all operators in an oil field. Cooperation of the industry with the Government in planning and carrying out research is necessary to make full use of all the facilities, resources, and personnel available.

Barnsdall Buys Stations In Kansas City

KANSAS CITY, MO., Sept. 4.—Eight service stations in Kansas City were recently purchased by the Barnsdall Refining Co. at a receivers' sale of the properties of Interstate Refineries, Inc.

With the addition of these stations to the Barnsdall group, that company will own and operate 20 service stations here, in addition to supplying about 40 dealers with Be Square products.

This purchase follows the acquisition by the Barnsdall of the Waite Phillips Co. of Tulsa, which included two refineries, and 155 tank and service stations in Missouri, Kansas, Oklahoma and Arkansas.

The Barnsdall company having offices at Kansas City is a subsidiary of the Barnsdall Corp. of New York and Tulsa. It was organized in 1921 by M. G. Eitelman, vice president, and has enjoyed rapid growth during the five years of its existence, having now over 300 tank and service stations in the four states mentioned above.

Total Petroleum Stocks Reduced 5.3% in Year; Supply Still Dwindles

Staff Special

CLEVELAND, Sept. 7

ABOVE ground stocks of petroleum, both crude and refined oils, were decreased by 5,126,000 barrels in July, according to the report of the Bureau of Mines on crude oil production and refinery operations. The largest drafts were on heavy and light California crudes, and heavy crude east of California. Stocks of light crude east of California were diminished by almost 800,000 barrels. Stocks of refined products were reduced by 428,000 barrels. Total above ground stocks of petroleum on July 31 were 5.3 per cent less than total stocks on July 31, 1925.

Total gasoline output in July at 329 refineries having a rated daily capacity of 2,688,000 barrels of crude a day, exceeded a billion gallons for the fourth consecutive month. However, the daily average output, 33,772,064 gallons, was 0.4 per cent less than the June daily average output. Crude production was 37,804 barrels daily average more in July than in June or 1.8 per cent.

For the first time domestic shipments of gasoline from refineries exceeded the billion-gallon mark, shipments amounting to 1,014,804,000 gallons, a daily average of 32,735,613 gallons compared with 32,301,700 gallons daily average in June. Domestic demand was 5.6 per cent larger than demand in July, 1925.

Exports Are Smaller

DOMESTIC gasoline output was 8 per cent larger in July than in July, 1925. Imports were slightly less than 3,000,000 gallons in July, this year than a year previous, but exports were 50,000,000 gallons or almost 50 per cent more, although July exports were the smallest since March.

Stocks of gasoline on July 31 stood at 1,609,230,000 gallons, a decline of 104,000,000 gallons during the month and were only 13,000,000 gallons larger than on July 31, 1925, when the total, according to revised statistics for 1925 issued by the bureau last week, stood at 1,596,294,000 gallons. Until last week the bureau's reports carried stocks of gasoline on July 31, 1925, at 1,610,790,000 gallons. Where probable duplications were found was not revealed.

Including natural gasoline blends mixed outside refineries and benzol blends, the total motor fuel output in July amounted to 1,095,900,000 gallons, a daily average of 35,350,000 gallons, compared with a total output of 1,065,700,000 gallons or daily average of 35,520,000 gallons in June. Motor benzol production was increased slightly in

Table No. 1.—Analysis of Petroleum Supply and Demand

(Barrels of 42 U. S. Gallons)

	May 1926	June 1926	July 1926	July 1925
SUPPLY:				
Domestic crude production:				
Light	51,422,000	51,065,000	53,174,000	52,138,000
Heavy	11,134,000	10,677,000	11,798,000	15,625,000
Imports:				
Crude	4,502,000	5,571,000	5,188,000	4,155,000
Refined	2,016,000	2,341,000	1,979,000	1,693,000
Total supply all oils	69,074,000	69,654,000	72,139,000	73,611,000
Daily average	2,228,000	2,322,000	2,327,000	2,375,000
Decrease in stocks all oil	2,595,000	4,186,000	5,126,000	*1,081,000
DEMAND:				
Total demand:	71,669,000	73,840,000	77,265,000	72,530,000
Daily average	2,312,000	2,461,000	2,492,000	2,334,000
Exports**				
Crude	1,842,000	1,225,000	1,726,000	1,302,000
Refined	9,630,000	9,729,000	8,505,000	8,151,000
Domestic demand	60,197,000	62,886,000	67,034,000	63,077,000
Daily average	1,942,000	2,096,000	2,162,000	2,035,000
Excess of daily average domestic production over domestic demand	76,000	†38,000	†66,000	†151,000
STOCKS (End of month): Crude:				
East of California:				
Light	224,786,000	222,092,000	221,300,000	308,231,000
Heavy	59,223,000	59,340,000	56,884,000	
California:				
Light	37,179,000	35,405,000	33,583,000	43,411,000
Heavy‡	88,180,000	87,389,000	87,761,000	72,388,000
Total crude	409,368,000	404,226,000	399,528,000	424,030,000
Total refined	118,673,000	119,629,000	119,201,000	123,807,000
GRAND TOTAL LIQUID STOCKS	528,041,000	523,855,000	518,729,000	547,837,000

*Increase
**Includes shipments to non-contiguous territories.
†Deficiency.
‡Includes fuel oil.

Table No. 3—Daily Average Production

(Amounts in Barrels)

States	July	June
Arkansas	163,645	168,700
California	604,619	608,981
Colorado	9,548	8,400
Illinois	21,968	22,067
Indiana	2,225	2,333
Kansas	120,032	120,733
Kentucky	17,748	17,560
Louisiana, Gulf Coast	12,645	10,233
Rest of State	54,710	58,734
Michigan	161	100
Montana	29,000	26,433
New Mexico	4,291	4,233
New York	5,613	5,333
Ohio, central-eastern	15,000	15,800
Northeastern	5,549	6,033
Oklahoma, Osage	70,645	70,300
Rest of state	409,801	412,453
Total Oklahoma	480,446	482,753
Pennsylvania	25,290	25,700
Tennessee	90	140
Texas, Gulf Coast	99,903	74,300
Rest of state	341,161	312,733
Total Texas	441,064	387,033
West Virginia	16,807	17,100
Wyoming, Salt Creek	43,903	47,967
Rest of state	21,516	21,700
Total U. S.	2,095,870	2,058,066
Classification by Gravity		
24° A.P.I. gravity and lighter	1,715,290	1,702,166
Heavier than 24°	380,580	355,900

Table No. 2—Productions, Imports, Exports and Deliveries of Crude

(Amounts in Barrels)

	July Daily Average Production	June Daily Average Production	Jan.-July Production 1926	Jan.-July Production 1925	‡†July Daily Average Deliveries	*†‡June Daily Average Deliveries	‡Jan.-July 1926 Total Deliveries	‡Jan.-July 1925 Total Deliveries
Appalachian	80,548	81,633	16,361,000	16,079,000	81,097	7,467	16,203,000	16,587,000
Lima-Indiana	5,968	6,500	1,223,000	1,277,000	7,322	7,766	1,423,000	1,386,000
Michigan	161	100	22,000	.....	161	100	22,000	.....
Illinois-S. W. Ind.	23,774	23,933	4,918,000	4,984,000	27,742	30,100	3,769,000	4,974,000
Mid Continent	1,159,994	1,143,653	231,030,000	248,993,000	1,219,710	1,272,400	252,845,000	257,305,000
Gulf Coast	112,548	84,533	19,386,000	19,089,000	130,355	77,033	22,643,000	18,311,000
Rocky Mountain	108,258	108,733	22,400,000	19,677,000	108,710	108,800	20,900,000	19,816,000
California	604,619	608,981	128,831,000	132,309,000	**632,969	**694,466	136,921,000	109,715,000
Total Domestic	2,095,870	2,058,066	424,171,000	442,415,000	‡2,208,066	‡2,270,134	‡454,726,000	‡428,094,000
Imports	167,387	185,700	36,815,000	40,253,000	165,516	.....	.....	.....
Deliveries of Foreign Crude	.....	.....	.....	.....	.....	187,800	36,852,000	39,927,000
Exports	.....	.....	.....	.....	55,677	40,833	9,299,000	8,040,000
Total New Supply	2,263,257	2,243,766	460,986,000	482,668,000	.....	.....	.....	.....

*Revised †Deliveries to refiners or other consumers, but not necessarily actual consumption in month of delivery.
‡Includes exports **Includes fuel.

Table No. 4—Stocks of Crude Oil

(Domestic unless otherwise specified, Amounts in thousands of Barrels

Districts	At Refineries July 31, 1926	*June 30, 1926	†July 31, 1925
East Coast:			
Domestic	8,258	8,544	8,601
Foreign	3,092	2,681	2,209
Appalachian	1,722	1,688	1,307
Indiana, Illinois, etc.	1,881	1,919	1,438
Oklahoma, Kans.	3,081	3,713	5,290
Texas Gulf Coast:			
Domestic	6,627	6,736	5,496
Foreign	416	407	663
Texas, rest of state	1,133	1,147	1,289
Louisana Gulf Coast:			
Domestic	6,664	6,256	4,533
Foreign	1,089	1,464	1,421
Louisana-Arkansas	572	649	604
Rocky Mountain	1,500	1,538	1,456
U. S. east of Calif.	36,035	36,742	34,307
At Tank Farms, in Pipe Lines and Elsewhere than Refineries			
Appalachian	6,984	6,928	6,874
Kentucky	1,667	1,740	1,902
Lima-Indiana	771	813	1,114
Illinois-S. W. Indiana	11,731	11,854	10,886
Okla.-Kans.-Texas except Gulf Coast	135,582	135,739	163,104
N. Louisana-Arkansas,	38,544	40,238	39,603
Gulf Coast	16,006	16,558	20,951
Rocky Mountain	30,495	30,509	28,574
Foreign:			
Atlantic ports	70	58	173
Gulf ports	299	253	743
Total east of Calif.	278,184	281,432	308,231
California:			
20° and lighter	33,583	35,405	43,411
Heavier than 20°	87,761	87,389	72,388
Grand Total	399,538	404,226	424,032
CLASSIFICATION BY GRAVITY			
(Crude elsewhere than refineries East of California			
24° and lighter	221,300	222,098	.....
Heavier than 24°	56,884	59,340	.....

*Revised †Final figures

July, amounting to 7,500,000 gallons. In June benzol production was estimated at 7,200,000 gallons. The benzol estimate is based by the bureau of production of by-product coke.

More Naturals Used

NATURAL gasoline production in July, 3,560,000 gallons daily average, was 8,000 gallons on the average less than in June. Demand, however, was larger as stocks at the end of the month were 2,647,000 gallons or 705,000 gallons less than at the end of June. Six per cent of the gasoline turned out by refineries was produced with natural gasoline. Sixty-three per cent of refinery gasoline was produced by straight distilling. This was a decline of 1 point from the June percentage. The proportion of cracked gasoline produced was unchanged at 31 per cent. As has been the case since August, 1924, domestic production was in excess of domestic demand. In the last 23 months exports have caused the only draft on stocks.

In July every refinery district reduced gasoline stocks except the Louisiana Gulf Coast, which takes in the plants near New Orleans and Baton Rouge. Every district reported larger shipments in July than in June except Texas and Louisiana-Arkansas and the fall in Gulf Coastal shipments accounts for the slackening in those states when they are considered as a whole. The slump in Gulf Coastal shipments accentuates the previously mentioned decline in exports of gasoline and the weekly market about the quietness of the export market.

Demand for kerosene and fuel and gas oils declined in July and stocks increased. Kerosene output was less in July than in June but the output of gas and fuel oils was larger. Lubricant stocks increased only 526,000 gallons although exports were less and production more. Total domestic demand for lubricating oils during July was 1,932,000 gallons more than in June.

Daily average production in June was 37,000 barrels larger than the June daily average production because of Spindletop and the Panhandle. Daily average production in the Texas Gulf Coast jumped from 74,300 barrels in June to 99,903 barrels in July. Average production in the rest of Texas increased from 312,733 barrels in June to 341,161 barrels in July. Montana production increased 2,500 barrels daily average. Arkansas, California, Oklahoma, north

Table No. 5—Gasoline Situation in Recent Months

(Gallons)

	Production	Imports	Exports	Domestic Shipments	Stocks
June, 1925	944,496,000	16,128,000	110,946,000	870,408,000	1,676,472,000
July	969,066,000	160,842,000	105,168,000	960,918,000	1,596,294,000
August	974,022,000	13,188,000	124,026,000	937,566,000	1,521,912,000
September	906,066,000	7,644,000	94,164,000	847,434,000	1,494,024,000
October	944,496,000	8,988,000	106,596,000	832,692,000	1,508,220,000
November	921,732,000	15,666,000	119,364,000	757,008,000	1,569,246,000
December	933,996,000	13,440,000	129,864,000	754,068,000	1,632,750,000
†1925 Total	10,903,242,000	160,146,000	1,322,874,000	9,402,330,000	.....
*January 1926	948,904,000	16,118,000	143,969,000	720,358,000	1,749,023,000
*February	863,525,000	17,133,000	120,304,400	650,718,000	1,858,659,000
*March	969,543,000	21,701,000	133,966,000	779,571,000	1,936,336,000
*April	987,633,000	19,057,000	887,891,000	831,410,000	1,926,725,000
May	1,029,378,000	26,082,000	190,218,000	989,856,000	1,802,094,000
June	1,017,996,000	19,488,000	137,248,000	969,066,000	1,713,264,000
July	1,046,934,000	19,320,000	155,484,000	1,014,804,000	1,609,230,000
Jan-July	6,863,892,000	138,894,000	1,101,660,000	5,924,646,000	1,609,230,000

†All 1925 statistics revised by Bureau of Mines.
*Subject to Bureau of Mines revision.

Table No. 6—Gasoline Production by the Various Methods in July

(Gallons)

	Straight run	%	Cracked	%	Natural Gasoline	%	Total
East Coast	92,399,000	55	68,177,000	41	6,930,000	4	167,506,000
Appalachian	29,698,000	73	9,966,000	25	1,008,000	2	40,672,000
Indiana, Ill., etc	82,730,000	56	63,324,000	42	3,150,000	2	149,204,000
Oklahoma, Kansas, etc	115,906,000	63	54,152,000	29	14,532,000	8	184,590,000
Texas	117,049,000	55	83,229,000	39	13,272,000	6	213,550,000
Louisana and Arkansas	39,002,000	59	24,225,000	37	2,940,000	4	66,167,000
Rocky Mountain	28,558,000	50	24,795,000	44	3,234,000	6	56,617,000
California	156,114,000	93	798,000	..	11,718,000	7	168,630,000
U. S. TOTAL	661,486,000	63	328,666,000	31	56,784,000	6	1,046,936,000
U. S. TOTAL June, 1926	654,037,000	64	309,433,000	31	54,516,000	5	1,017,986,000
Gulf Coast*	115,794,000	53	91,134,000	42	10,920,000	5	217,848,000

*Included above under Texas, Louisiana and Arkansas.

Table No. 7—July Natural Gasoline Output, Demand and Stocks

	Natural Gasoline		Blended Motor Fuel			
	Production (net*)	Stocks end of month	Natural Gasoline used in blends	Naptha or other oils used in blends	Stocks end of July	Stocks end of June
Appalachian	5,224,000	2,328,000	239,000	305,000	358,000	336,000
Indiana, Illinois, etc.	1,146,000	263,000	63,000	33,000	22,000	26,000
Oklahoma, Kansas, etc	42,245,000	15,537,000	3,295,000	7,063,000	1,438,000	2,062,000
Texas	18,404,000	5,707,000	273,000	1,044,000	243,000	543,000
Louisiana and Arkansas	6,537,000	1,106,000	48,000	201,000	401,000	202,000
Rocky Mountain	3,636,000	429,000	91,000	135,000	159,000	164,000
Total east of California	77,192,000	25,390,000	4,009,000	8,781,000	2,621,000	3,333,000
California	33,167,000	1,071,000	not available		26,000	19,000
Total United States	110,359,000	26,461,000	.....	.....	2,647,000	3,352,000
Daily average July	3,560,000	.....	.....	.....	.....	.....
Daily average June	3,568,000	.....	.....	.....	.....	.....

*1% estimated

Table No. 8—Supply, Demand and Stocks of Heavier Products

	Production	Imports	Exports	Domestic Shipments	Stocks End of Month
Kerosene (Gals.)					
May	218,106,000	168,000	68,166,000	134,862,000	309,876,000
June	209,790,000	126,000	67,368,000	121,590,000	330,834,000
July	204,204,000	882,000	67,704,000	113,778,000	354,438,000
Jan.-July	1,485,750,000	1,260,000	491,988,000	939,666,000	354,438,000
July 1925	192,864,000	84,000	72,366,000	147,366,000	444,402,000
LUBRICANTS (Gals.)					
May	119,952,000	462,000	30,030,000	78,288,000	321,552,000
June	112,644,000	126,000	41,328,000	85,806,000	307,188,000
July	119,574,000	42,000	31,332,000	87,738,000	307,734,000
Jan-July	787,626,000	1,050,000	253,788,000	549,780,000	307,734,000
July 1925	104,958,000	126,000	30,012,000	62,874,000	287,784,000
WAX (Lbs.)					
May	56,050,000	213,000	23,968,000	18,983,000	149,396,000
June	50,672,000	812,000	27,211,000	18,415,000	155,254,000
July	54,267,000	2,089,000	30,768,000	24,138,000	156,704,000
Jan.-July	368,388,000	5,516,000	196,282,000	137,309,000	156,704,000
July 1925	46,032,000	1,922,000	26,594,000	18,802,000	112,942,000
GAS AND FUEL OILS (Gals.)					
May	1,273,482,000	57,456,000	114,954,000	.....	875,322,000
June	1,227,912,000	77,952,000	141,540,000	.....	947,268,000
July	1,316,742,000	62,160,000	101,934,000	.....	1,079,232,000
Jan.-July	8,642,046,000	388,416,000	888,552,000	.....	1,079,232,000
July 1925	1,448,790,000	54,054,000	131,712,000	.....	1,168,482,000

Louisiana and Wyoming production fell off.

Imports of crude were 18,000 barrels lower on the daily average than in June because of a fall of 30,000 barrels average in receipts from Mexico. Receipts from Venezuela were virtually unchanged from June receipts but receipts from "other countries," as the bureau lumps them, were more than 12,000 barrels larger on the average. The "other countries" probably includes Colombia whose crude is now available through the Andean National pipe line.

Exports at 55,677 barrels daily average were 15,000 barrels more than average June exports of crude.

Steady Fall in Crude Stocks

TOTAL stocks of crude oil in the United States have declined every month this year and east of California the decline has been for 14 consecutive months. The following table shows volume of stocks at the end of each month beginning with January, 1925. The 1925 figures contain producers' stocks of crude held east of California which on Dec. 31 amounted to 7,560,000 barrels. The 1926 figures do not contain producers' stocks so the total stocks of crude in the United States were probably slightly larger than those on Dec. 31 because producers' stocks have ranged between seven and a half and eight million barrels. The crude stocks table follows:

(Thousands of Barrels)

	*East of Calif.	†In Calif.	Total U. S.
1925			
January	319,338	100,026	419,364
February	318,582	101,729	420,311
March	316,915	103,721	420,636
April	317,051	106,605	423,656
May	319,994	110,081	430,075
June	318,672	112,395	431,067
July	316,139	115,799	431,938
August	311,129	120,073	431,202
September	308,925	124,483	433,408
October	305,892	127,450	433,342
November	304,534	128,934	433,468
December	299,367	129,434	428,801
1926			
January	291,400	130,841	422,241
February	287,975	131,638	419,613
March	287,710	131,678	419,388
April	286,208	124,290	410,498
May	284,009	125,359	409,368
June	281,432	122,794	404,533
July	278,184	121,344	399,528

*For 1925, but not for 1926, producers' stocks included on Dec. 31 these amounted to 7,560,000 bbls. †Includes heavy fuels.

While the petroleum industry is in a fairly strong position, there is still great need for cautious drilling in the opinion of F. Julius Fohs, chairman of the petroleum division of the American In-

Table No. 9—Runs to Stills of All Oils in July

(Amounts in Barrels)

Districts	Crude oil Domestic	Crude oil Foreign	Unfinished oils	Natural gas gasoline	Total oils Run to stills	Daily av. Runs in July	Daily av. Runs in June
East Coast	9,332,000	2,249,000	1,235,000	165,000	12,981,000	418,742	382,800
Appalachian	2,470,000	.....	82,000	24,000	2,576,000	83,097	95,433
Ind., Ill., etc	6,032,000	.....	409,000	75,000	6,516,000	210,193	211,467
Okla., Kans., etc	8,464,000	.....	262,000	346,000	9,072,000	292,645	293,267
Texas	12,895,000	305,000	388,000	316,000	13,904,000	448,516	446,867
Louisiana & Ark	4,745,000	1,216,000	381,000	70,000	6,412,000	206,839	207,433
Rocky Mountain	2,542,000	.....	554,000	77,000	3,173,000	102,355	107,033
California	17,192,000	.....	360,000	279,000	17,831,000	575,193	570,033
U. S. TOTAL	63,672,000	3,770,000	3,671,000	1,352,000	72,465,000	2,337,600	2,308,300
Daily at., July, 1926	2,054,000	121,600	118,400	43,600	2,337,600	.....	.....
Daily av., June 1926	2,047,200	120,400	97,400	43,300	2,308,300	.....	.....
Texas Gulf Coast	9,851,000	305,000	340,000	254,000	10,750,000	346,774	343,167
Louisiana Gulf Coast	3,119,000	1,216,000	187,000	6,000	4,528,000	146,064	154,200

Table No. 10—July Daily Average Gasoline Output, Shipments, Stocks, Changes from June

(Amounts in Gallons)

Districts	July Output Daily Av.	June Output Daily Av.	Per Cent of Change July from June	July Shipments Daily Av.	June Shipments Daily Av.	Per Cent of Change July from June	Stocks July 31 1926	Stocks June 30 1926	Per Cent of Change July from June
East Coast	5,403,419	5,184,033	+4.2	5,724,226	5,684,000	+ 0.6	345,755,000	353,700,000	— 2.2
Appalachian	1,312,000	1,323,367	—0.8	1,503,451	1,310,133	+14.7	32,535,000	38,470,000	—15.4
Indiana-Illinois etc	4,813,003	4,599,567	+4.6	5,829,967	5,349,567	+ 9.0	191,076,000	222,601,000	—14.1
Oklahoma-Kansas	5,954,516	5,892,367	+1.1	6,672,387	6,160,033	+ 8.3	122,954,000	145,208,000	—15.3
Texas	6,888,710	7,291,667	—5.5	7,531,258	7,673,733	— 1.8	169,024,000	188,943,000	—10.4
Louisiana-Arkansas	2,134,419	2,152,000	—0.8	1,962,129	2,328,400	—17.4	147,156,000	141,815,000	+ 3.7
Rocky Mountain	1,826,355	1,929,433	—5.3	2,419,129	2,127,833	+13.7	177,021,000	195,397,000	— 9.3
California	5,439,677	5,569,433	—2.1	5,550,774	5,943,433	— 6.6	423,696,000	427,140,000	— 0.8
Total U. S.	33,772,129	33,932,867	—0.4	37,128,807	36,893,767	+ 0.6	1,609,217,000	1,713,274,000	— 6.1
Texas Gulf Coast	5,363,839	5,678,100	—5.5	5,795,839	6,027,533	— 3.8	153,037,000	166,429,000	— 8.0
Louisiana Gulf Coast	1,663,516	1,718,867	—3.2	1,459,742	1,884,633	—22.5	144,920,000	138,603,000	+ 4.5

Table No. 11—Output, Except Gasoline, and Losses at Refineries in July, 1926

Districts	Kerosene (gals	Gas and Fuel oils (gals)	Lubricants (gals.)	Wax (lbs.)	Coke (tons)	Apshalt (tons)	Other finished products (gals.)	Unfinished products (gals.)	Losses (bbls.)
East Coast	36,879,000	223,619,000	39,183,000	22,458,000	16,180	128,244	7,356,000	3,530,000	593,000
Appalachian	13,982,000	25,568,000	17,076,000	8,461,000	1,736	.....	861,000	2,498,000	138,000
Ind., Ill., etc	16,472,000	73,336,000	10,958,000	6,661,000	21,211	16,439	6,121,000	298,000	176,00
Okla., Kans., etc	27,927,000	128,583,000	8,785,000	3,843,000	10,525	469	1,881,000	6,921,000	451,000
Texas	57,244,000	224,677,000	30,100,000	4,853,000	12,902	26,642	219,000	24,760,000	575,000
Louisiana & Ark	19,058,000	118,418,000	1,809,000	4,985,000	12,042	59,758	6,815,000	34,015,000	146,000
Rocky Mountain	7,243,000	27,661,000	2,467,000	3,006,000	8,762	3,437	1,666,000	30,593,000	81,000
California	25,410,000	494,886,000	9,198,000	.....	.....	46,207	8,694,000	*20,328,000	259,000
U. S. TOTAL	204,215,000	1,316,748,000	119,576,000	54,267,000	83,358	281,196	33,613,000	122,943,000	2,419,000
Daily av., July	6,588,000	42,476,000	3,857,000	1,751,000	2,689	9,071	1,084,000	3,966,000	78,000
Daily av., June	6,993,000	40,931,000	3,755,000	1,689,000	2,711	10,032	1,098,000	3,807,000	77,000
Texas Gulf Coast	48,391,000	169,490,000	29,145,000	4,670,000	10,123	26,642	81,000	9,319,000	480,000
Louisiana Gulf Coast	16,860,000	65,753,000	1,753,000	4,985,000	11,351	57,999	5,862,000	29,285,000	65,000

*Includes 102,000 barrels net tops produced.

Table No. 12—Stocks, Except Gasoline at Refineries on July 31, 1926

	Kerosene (gals.)	Gas and fuel oils (gals.)	Lubricants (gals.)	Wax (lbs.)	Coke (tons)	Asphalt (tons)	Other finished products (gals.)	Unfinished oils (bbls.)
East Coast	74,423,000	268,882,000	105,578,000	72,412,000	14,913	78,614	7,606,000	6,529,000
Appalachian	10,064,000	27,708,000	38,284,000	18,844,000	441	39	1,930,000	1,014,000
Indiana, Ill., etc	28,653,000	61,245,000	29,949,000	27,558,000	20,454	20,398	10,965,000	3,091,000
Oklahoma, Kan., etc	15,426,000	205,605,000	16,802,000	5,628,000	28,019	1,507	2,775,000	2,396,000
Texas	73,921,000	333,311,000	70,101,000	9,464,000	70,229	7,370	296,000	8,354,000
Louisiana & Ark	63,557,000	124,185,000	3,956,000	17,125,000	60,504	30,117	1,424,000	2,731,000
Rocky Mountain	12,284,000	58,317,000	7,411,000	5,529,000	66,167	8,808	1,021,000	1,850,000
California	76,104,000	.....	35,658,000	144,000	.....	38,000	11,676,000	*12,562,000
U. S. TOTAL, July 31	354,432,000	1,079,253,000	307,739,000	156,704,000	260,727	184,853	37,693,000	38,527,000
U. S. TOTAL, June 30	330,818,000	947,268,000	307,210,000	155,254,000	246,707	200,881	42,436,000	40,081,000
Texas Gulf Coast	61,595,000	285,927,000	68,595,000	9,206,000	67,439	7,370	184,000	7,840,000
Louisiana Gulf Coast	62,177,000	93,634,000	3,952,000	17,125,000	58,009	29,771	1,335,000	2,468,000

*Includes 4,664,000 barrels tops in storage.

stitute of Mining and Metallurgical Engineers. In a statement given to the Wall Street News (New York) Sept. 4, Mr. Fohs said:

"Generally speaking, the American oil industry is in excellent condition, even in the face of the recent increase in production, and more companies are in a sound financial condition than at any previous time in the history of the industry. This is due to a variety of causes: (1), about 20 per cent increased demand for petroleum products; (2), a fair price being paid the producer for crude, and (3), reduced cost of operation, due to technologic improvement of methods in every branch of the industry.

Will Absorb New Production

"THE total production for the first six months showed 10,000,000 barrels less output than during the same part of last year. It is still too early to predict the output for the last six months, but it will be greater than that previously anticipated. To offset this, there is every reason to believe that the increased demand will be maintained, which will absorb most of the new production, despite the increased output of motor spirits due to additional cracking.

"Whereas, a year ago the large production was due to a number of outstanding pools including the tremendous output from Smackover, now the production comes from a number of pools or groups of pools of smaller output, the largest being the Panhandle group, yielding, at present, over 100,000 barrels per day, with a further increase possible from the shut-in wells and wells on top of the sand.

"Among other important factors affecting production are—the Spindletop deep oil, now producing about 80,000 barrels daily, and the Seminole group of wells, which, while only producing 14,000 barrels, is capable of considerable increase from the Hunton lime.

"The Upton-Crane area, in West Texas, is showing a possibility of large wells, though its total production is under 90,000 barrels daily.

"NONE of the pools in southwest Texas is large enough to affect the general output. North central Texas is showing increased production from a number of small pools, perhaps the most important of such newer pools being the Woodson, in Throckmorton county.

"In east central Texas, the Nigger Creek pool is falling greatly behind expectations and the general outlook for large additional production from this, and other new pools from this district, is poor.

"The Gulf Coast has been combed this year with geophysical instruments and all other available methods for new salt domes, as well as attempts being made to increase production from deeper sands in old pools. Although a few new salt domes have been located, the number has been under expectations. The increase in production at Spindletop, Sour Lake and other domes, from deep peripheral wells, has come sooner than was expected, and this district can be drawn upon for considerable oil within the next few years.

California pools are maintaining a steady production with nothing startling in new developments. Kansas, Arkansas and Louisiana have no new pools of consequence in sight.

"A decrease of drilling in new fields is much to be desired and since there is no tendency on the port of operators to co-operate and keep drilling in such districts within reasonable limits, local pro-ration of runs and cut in price, as recently effected in the Panhandle, is wholesome economic pressure, although shortage of pipe line accommodations, gas and water for drilling are proving natural checks."

Committee to Draft Mid-Continent Export Corporation Proposals

Staff Special

TULSA, Sept. 4.

PROPOSALS for the formation of a co-operative export oil corporation in the Mid-Continent, are to be worked out by a committee of refiners in the next few weeks. The committee was appointed Sept. 1 at a second meeting of refiners interested in the proposal. The first meeting was held at Kansas City Aug. 13 at the call of George D. Locke, vice-president, Barnsdall Refineries, Inc.

Committee proposals will be sent all refiners interested in the proposition before the next meeting so that they can be carefully examined. The companies will thus be prepared to suggest changes or vote for the plan as offered.

Members of the special committee are: Mr. Locke; E. J. Marston, vice-president, Texas Pacific Coal & Oil Co., Fort Worth; D. E. Buchanan, vice-president, Chestnut & Smith Corp., Tulsa; Walter K. Campbell, Western Oil Corp., Wichita Falls, and F. A. Pielsticker, vice-president, Skelly Oil Co., El Dorado, Kans.

Export Buying Intermittent

EXPORT buying in the Mid-Continent field is largely intermittent. The chief exception to this way has been the buying of the Standard Oil Co. of New Jersey, which has purchased large quantities of 64-66, 375 end point gasoline from Independent refiners in this area in the last two years. Other buyers come into the market whenever they are able to land an order in the export market. Part of the time they are able to take about all the goods that can be found but at other times they are unable to buy gasoline even when it is offered at bargain prices.

It is the thought of refiners interested in the movement that a cooperative exporting agency might be able to provide a steady outlet for goods. A plan probably would be followed of having members of the corporation obligate themselves to produce a specified quantity of export gasoline every month with certain quantities of other products.

With a steady supply of a large quantity of goods to offer it is predicted that the corporation could make advantageous contracts with foreign buyers as well as the major companies. An example of how a cooperative corporation could function is the case of the French which may establish a monopoly in petroleum products. A strong co-operative organization in this field could bid to supply without difficulty all of the gasoline and other petroleum products used in France.

One of the difficulties that has confronted present export buyers, has been the demand of foreign agencies for mixed cargoes of gasoline and kerosene. Refiners in this field have declined to sell kerosene many times in the past in order to get gasoline business.

Produce Enough Kerosene

ON extensive contracts covering long periods refiners believe that they could afford to obligate themselves to produce enough kerosene to supply the demand. A definite schedule could be worked out so that plants could be operated to advantage.

In 1925 the Standard Oil Co. of New Jersey took upwards of 50,000,000 gallons of 64-66 gasoline from the Mid-Continent. This year the requirements of the company have been cut to something like half that volume. At least two contracts were cancelled in the middle of the year.

Refiners in this area have concluded the New Jersey company is doing its best to push the use of U. S. Motor gasoline by its foreign customers and has been demanding that they take a certain amount of U. S. Motor with every order for 64-66, 375 end point goods. The New Jersey company purchases much of the 64 it sells from other refiners but largely ships its own low gravity products.

Opinion among Mid-Continent refiners is divided as to whether this policy is advantageous or detrimental to export business in the southwest. Refiners with select crude from which they can profitably make 64 gasoline, hope that the proposed export corporation will be able to maintain a foreign market for 64. Others find it difficult to make 64 without sacrificing other gasoline production and favor training Europeans to use the heavier grades.

Some fear has been expressed that the proposed French law to prohibit the importation of 375 end point gasoline will be enacted next winter. Generally the thought is, however, that the French are not ready for that step yet with their present motor equipment.

Seminole Pool is Given Further Boost By Big Well in Wilcox Sand

By A. F. Hinton
N. P. N. Staff Writer

TULSA, Sept. 4

COMPLETION of a second large well in the Wilcox sand in the Seminole pool by the Gypsy Oil Co. at the northern edge of Hunton lime production gave new stimulus to activities in that area during the past week and indicated that the field probably will become one of the major Wilcox sand pools of the state.

Early in the week the Gypsy topped the Wilcox sand at 4170 feet in its No. 1 Carter in the SEc NE NW of 24-9-6. This well is nearly one-half mile east and a mile and a quarter north of the Independent-Garland Wilcox sand well which started intensive development in the field.

At seven feet in the sand the Gypsy well started off at 100 barrels per hour of 42.3 gravity oil at 71 degrees F. When the hole was deepened one foot the flow increased to 173 barrels per hour. On Sept. 1, the well was deepened another foot to 4179 feet and made 4155 barrels. It is being completed at that depth.

During the 24 hours ending this morning the Gypsy well made 3581 barrels. The Independent-Garland well made 5484 barrels during the same period although it is about a month and a half old.

Other Tests Hold Interest

TWO other tests in the field are the center of interest today by producers who are watching eagerly the trend of development to see what may be expected of the pool. In the SEc SW NE of 23-9-6 Amerada Petroleum Corp.'s No. 1 Killingsworth found the Hunton lime with a showing for a 300 barrel well. This well extended the Hunton lime production three-quarters of a mile to the west but the well is being carried on down to the Wilcox.

Casing is being set now in the Amerada well at 4056 feet in the Sylvan shale. It is considered likely that this well will be the next to reach the Wilcox. It is being watched closely due to the fact that it is a quarter of a mile south and three-quarters of a mile west of the Gypsy well and a producer would do much to indicate the extent of the Wilcox in the northern part of the field.

Mid-Continent Petroleum Corp. drilling in the SEc of 14-9-6 is another well of interest. This well topped the Hunton lime at 3979 making an initial small flow of 35 barrels. It was swabbed and flowed 150 barrels in the first 24 hours. The well is a half mile north of Hunton production. It is drilling ahead to the Wilcox now at 4029 feet.

Much Speculation Over Output

TESTS now drilling between the Gypsy and Independent wells will be watched with interest to see whether the two wells are on the same Wilcox sand structure. If both are on the same high the field undoubtedly will be highly important. If there is a saddle between the two, production may be more limited.

Guessing the future peak production of the field is a popular indoor and outdoor sport in producing circles at the moment. Thus far it is all guess work because geologists do not have enough information at hand to prepare sub-surface maps with any degree of confidence. Guesses run from a low of about 60,000 barrels per day to a high as great as 100,000 barrels per day. The average guess appears to be around 75,000 barrels as the peak production.

Correlations on top of the Hunton lime from present producing wells in that horizon are of little or no value in determining the structure of the Wilcox. The thickness of the Hunton is a far better guide. In both the Independent and Gypsy wells there was a very thin layer of Hunton lime while in the Amerada No. 1 James in the NW NE SE of 24-9-6 the drill penetrated 60 feet of Hunton and found water in the Wilcox near the top of the sand.

In the Independent's big well the Hunton was found at 3898 to 3904, production showing being limited to about six feet. In the Gypsy well the Hunton extended from 3969 to 4010 feet and in the Amerada No. 1 Killingsworth which has not reached the Wilcox as yet the log shows lime at 3935 to 3970 feet.

Geologists believe that the Hunton lime was subjected to erosion after being laid down and that it has been thinned down over the Wilcox highs. The Viola lime, below the Hunton appears to be the first stratum which can be correlated with the Wilcox.

The Gypsy well in section 24 found the Wilcox 74 feet lower than the Independent on a sea level basis. The Amerada No. 1 Killingsworth is running considerably higher than the Gypsy

Completions in North Louisiana and Arkansas, Week Ending Sept. 2

Louisiana—Urania

Company	Well	Location	Depth		Yield
Beckman and Freeman	Urania B-6	7–10–2E	1512		100 bbls.
O. W. Clark, trustee	Harper No. 7	26–10–1E	1492		100 bbls.
O. W. Clark, Trustee	Harper No. 8	23–10–1E	1501		65 bbls.
Little River Oil Co.	Ratcliff No. 1	26–10–1E	1560		20 bbls.
La. Oil Ref. Corp.	Tremont B-21	30–10–2E	1539		25 bbls.
Natural Gas & Fuel Corp.	Rusell A-3	26–10–1E	1554		25 bbls.
Natural Gas & Fuel Corp.	F. Tullos No. 3	26–10–1E	1535		30 bbls.
Natural Gas & Fuel Corp.	Urania M-3	20–10–2E	1543		65 bbls.
H. L. Hunt	Griswold No. 2	2–9–1E	1498		85 bbls.
La. Oil Refining Corp.	Tremont C-3	2–9–1E	1505		250 bbls.

Caddo parish—Caddo district

Gulf Refining Co.	Ferry Lake No. 245	22–20–16	2265		30 bbls.
Gulf Refining Co.	Ferry Lake No. 247	15–20–16	2275		15 bbls.
Gulf Refining Co.	Muslow Oil Co. E-1	35–21–15	4964		dry aband.

Claiborne parish

Gulf Refining Co.	Crichton No. 1	35–19–8W	2335		dry aband.

Webster parish—Cotton Valley

Magnolia Pet. Co.	J. Tiner No. 2	21–21–10	2555		25 bbls.

Ouachita parish

Natural Gas & Prod. Co.	Tensas Delta No. 7	2–21–4E	2200		6 mil gas
R. J. O'Brien	Rea & Green No. 2	35–19–4E	2208		3 mil. gas

Arkansas—Stephens

La. Oil Ref. Corp.	Patton No. 1	15–15–19	1540		15 mil. gas
Ohio Oil Co.	J. M. Curry No. 1	32–15–19	2180		15 bbls.
Reynolds et al.	Davis A-1	22–15–19	2175		dry aband.

Columbia county

Company	Well	Location	Depth		Yield
Gordon & Folwell	Jones	1–16–20	2235		10 bbls.
Haynesville Trust. Synd.	Wingfield No. 1	18–19–19	2370		dry aband.

LaFayette county

Texas Oil Co.	Cobein No. 1	14–17–24	2800		dry aband.

Union county—Upland district

A. H. Stolz	Wait No. 1	4–18–16	2235		dry aband.

Lisbon

Gulf Refining Co.	Mrs. L. Parker No. 4	21–17–16	2140		30 bbls.

Lisbon county

Eason et al	Mooty No. 3	22–17–16	2168		15 bbls.
Lion O. & R. Co.	Mitchell A-16	17–17–16	2175		2 mil. gas
Magnolia Pet. Co.	Hulsey No. 2	20–17–16	2160		50 bbls.
Magnolia Pet. Co.	John Slaughter No. 2	8–17–16	2115		25 bbls.
J. L. Meek	Milner No. 1	15–17–16	2203		10 bbls.
Ohio Oil Co.	F. M. Stock No. 2	21–17–16	2165		25 bbls.
Southern Oil Purch. Co.	Tooker No. 1	3–17–16	2065		10 bbls.

Smackover

A. Meek, trustee	Clauson No. 2	35–15–17	2313		65 bbls.
Simms Oil Co.	S. A. Laney No. 10	31–15–15	2585		50 bbls.
Standard Oil Co., of La.	Bennett B-8	32–15–15	2587		50 bbls.
Hollyfield et al.	Giller No. 10	11–16–15	2000		20 bbls.
Magna Prod. Co.	Tatum No. 6	7–16–15	2007		15 bbls.

Completions in N. C. & E. Texas, & Panhandle Week Ending Sept. 4

Company	Well Farm	Location Survey	Depth	Initial Prod.
Archer County				
Gates et al	7-Thomas	Thomas	1165–1177	60
Gates et al	8-Thomas	Thomas	1148–1167	20
Marland	2-Thomas	Thomas	1175–1182	25
Humble	1-Moss	H&TC	T.D. 1802	Dry
Bridwell et al	4-Wilson	H&TC	T.D. 1710	Dry
Parks-Priddy	1-Carter	ATNC	T.D. 1585	Dry
Kentucky et al	1-Wilson	ATNC	T.D. 1458	Dry
Tidal	1-Turberville	Carson	T.D. 1679	Dry
American	1-Turberville	Carson	T.D. 1612	Dry
Mid-Kans	2-Andrews	Carson	T.D. 1550	Dry
Texas	1-Jentoch	Harris	T.D. 1752	Dry
Phillmack	1-Wilson	Harris	T.D. 1758	Dry
Gulf	2-Ikard	Jefferson	T.D. 1202	Dry
Gulf	1-Ward	Tomilson	T.D. 1302	Dry
Grebin et al	1-Spradlin	Meade	T.D. 1503	Dry
Brown County				
Root-Rhodes	1-Hughes	Brewster	T.D. 2925	Dry
Eastland	1-Reynolds	H&TB	T.D. 2325	Dry
Smith Co	1-Mullins	Mullins	T.D. 1605	Dry
Ark. Fuel	1-Bettis	Webster	T.D. 1436	Dry
Humble	7-Kilgore	Benson	1159–1182	500
Humble	8-Kilgore	Benson	1137–1162	150
Humble	6-Kilgore	Benson	1194–1295	10
Humble	8-Kilgore	Delgado	1145–1160	25
Huffman et al	5-Kilgore	McClure	1250–1260	20
Louisiana	3-Henslee	Curlong	1275–1299	225
McLester	7-Wooldridge	Gaines	1251–1268	200
Hill-West	5-Newton	Mitchell	1207–1228	100
Hill-West	1-Newton	Mitchell	1207–1228	100
Mid-West	9-Suttles	Mitchell	1138–1153	2
Lester	2-Fry	Chaudoin	1321–1223	100
Lester	3-Fry	Chaudoin	1318–1321	200
Humble	1-Fry	Chaudoin	1318–1322	90
Humble	2-Fry	Chaudoin	1315–1320	20
Dozier et al	1-Casey	Wilson	1525–1530	30
Callahan County				
Brown	2-Long	Anderson	1395–1410	40
Brown	3-Long	Anderson	1384–1396	50
Slick	2-Bond	Anderson	3191–1404	150
Moutray	1-Flores	BBB&C	T.D. 765	15
Carson County—Panhandle				
American	7-Burnett	L&GN	T.D. 3008	1200
Coleman County				
Miller et al	1-Edmundson	Johnson	T.D. 665	Dry
Comanche County				
Smith	1-Turner	Sullivan	T.D. 1504	Dry
Cooke County				
Jooser	4-Hyman	Moss	1229–1251	85
Crane County				
Gulf	1-McElroy	GCSD	2727–2750	500
Crockett County				
Gulf	4-Powell	GCSF	2651–2668	20
Humble	9-Powell	Parker	2665–2675	122
Eastland County				
Gulf	3-Parsons	McLennan	1576–1580	40
Humble	4-Parsons	McLennan	1217–1235	12
Panhandle	2-Wright	McLennan	T.D. 1620	Dry
Humble	6-Parsons	McLennan	T.D. 1445	Dry
Texas	1-Wright	McLennan	T.D. 1629	Dry
Gray County—Panhandle				
Texas	2-Saunders	H&GN	2370–2412	30M
Hardeman County				
Wolfe	1-Norton	Roberson	T.D. 1602	Dry
Staley-Wynne	1-Evans	W&NW	T.D. 3210	Dry
Hill County				
Johnson et al	1-Rose	Baldez	T.D. 3347	Dry
Johnson et al	1-Sanderson	Baldez	T.D. 1390	Dry
Hutchinson County—Panhandle				
Amarada	4-Whittenberg	GC&SF	2970–3020	300
Gulf-Panhandle	1-Christian	Christian	2929–2982	152
Gulf-Panhandle	12-Dial	GC&SF	2915–3000	250
Gulf	2-Whittenburg	GCSF	2924–2990	135
Marland	1-Reiner	H&TC	2893–2899	12M
Gulf	1-Christian	Anglin	2912–2973	125
Gulf	1-Whittenburg	H&TC	2714–2730	15
American	2-Whittenburg		2780–2822	200
Empire	1-Johnson	M&C	2864–2940	465
Gulf	3-Johnson	H&TC	2890–2950	35
Marland	1-Johnson	M&C	2926–2939	362
Marland	1-Whittenburg	H&TC	2800–2824	75
Marland	2-Whittenburg	H&TC	2860–2890	90
Marland	2-Whittenburg	H&TC	2914–2943	157
Marland	6-Whittenburg	H&TC	2923–2975	2500
Phillips	1-Johnson	Whitley	2987–2976	150
Phillips	10-Whittenburg	M&C	T.D. 2715	20M
Phillips	15-Whittenburg	M&C	2928–2979	1000
Skelly	1-Johnson	M&C	2980–3006	2200
Skelly	3-Johnson	M&C	2926–2950	1700
Skelly	4-Johnson	M&C	2924–2965	1350
Dunnigan	1-Johnson	A&B	2900–2950	1350
Hughes	4-Kingsland	M&C	2905–2915	10
Hughes	10-Kingsland	M&C	2740–2806	145
McMan	4-Wheatley	H&TC	T.D. 900	Dry
Jack County				
Hester et al	2-Snedecker	Robbins	779– 790	12
Buttram	1-Cullers	Chairs	2028–2041	105
Limestone County				
Pure	2-Atkins	Varella	2479–2550	315
Transcontinental	3-Atkins	Varella	2840–2846	470
Transcontinental	2-Cogdell	Varella	2514–2681	860
Godley et al	2-Rossen	Varella	2831–2842	1300
Smith	1-Rossen	Varella	2637–2818	1500
Transcontinental	5-Rossen	Varella	2794–2818	1500
Moss et al	1-Atkins	Varella	2880	Dry
Texas	1-O'Dell	Reed	T.D. 2814	Dry
Bass et al	1-Church	Varella	T.D. 2831	Dry
Milam County				
Allen-Harper	1-Brown	Marshall	T.D. 3105	Dry
Montague County				
Humble	5-Maddox	Thompson	892– 897	30&2.8M
Texhoma	2-Bouldin	Chambliss	1112–1126	150
Texas	19-Gist	Donoho	865– 903	60
Texas	2-Maddox	Chambliss	T.D. 2128	Dry
Navarro County				
Simms	12-Rose	Harris	T.D. 3008	1200
Shackelford County				
Jackson et al	2-Flippin	TP	T.D. 666	Dry
Gibson et al	1-Dyer	TP	T.D. 1356	Dry
Hays	1-Letchber	TEL	T.D. 465	6
Rosier-Pendleton	2-Cook	ET	1253–1271	500
Rosier-Pendle	1-Cook	ET	1263–1280	300
Rosier-Pendle	14-Cook	ET	1241–1257	60
Rosier-Pendle	15-Cook	ET	1197–1212	800
Morton	1-Davis	TP	1439–1442	20
Throckmorton County				
Reiter-Foster	3-Parrott	TEL	3920–3930	45
Reiter-Foster	2-Stubblefield	TEL	T.D. 4332	Dry
Upton County				
McCamey et al	1-Hughes	GCS	T.D. 2328	Dry
Roxana	1-Estep	MKT	2207–2250	115
Republic	2-Baker		2190–2216	10
Texas	2-Burleson	Jones	2170–2255	95
Marland	11-Burleson	Jones	2195–2250	145
Wilbarger County				
Milham	4-Waggoner	H&TC	1870–1884	78
Phillips	4-Waggoner	H&TC	1938–1952	190
Dyson et al	4-Waggoner	H&TC	T.D. 2487	Dry
Lebus	1-Waggoner	H&TC	T.D. 600	Dry
Young County				
Sun	11-Dietrich	BBB&C	T.D. 1243	Dry
Collier	3-Collier	Young	T.D. 635	Dry
Lucas-Nance	1-Boozer	Garrett	1825–1851	75

well and geologists are looking for it to be a good producer.

Others Drilled Deeper

FIVE Hunton lime wells in section 24 are now being drilled deeper to test the Wilcox. It is expected that virtually all of these wells which have declined to moderate size, will be taken down if possible. Twins may be drilled on down to the Hunton on this acreage if it is not possible to produce from both sands to advantage.

The next two weeks probably will see some of these old wells in the Wilcox as a first crop. The second crop will include those wells which were started promptly after the Independent-Garland discovery was brought in.

Thus far drilling has progressed very

Drilling Operations in Oklahoma, Kansas and North Texas

	Sept. 4th—Week Ending—Aug. 28									
	Loc.	Rigs.	Drg.	S.D.	Total	Loc.	Rigs	Drg.	S.D.	Total
OKLAHOMA										
Burbank	5	11	16	...	32	7	8	22	1	36
Other Osage	14	14	51	9	88	17	10	51	7	85
Bristow-Cushing	15	31	144	11	201	21	30	143	13	207
North Oklahoma	13	23	138	88	262	17	19	148	77	261
South Oklahoma	22	30	161	44	257	25	27	173	44	269
Muskogee	...	14	65	16	95	...	13	61	13	87
Okmulgee-Bristow	10	57	126	28	221	7	50	137	21	215
Tonkawa	2	...	24	1	27	2	...	24	1	27
Wewoka-Cromwell	15	20	204	34	273	15	16	206	24	261
Total Oklahoma	96	200	929	231	1456	111	173	965	201	1450
KANSAS	65	71	243	92	471	62	68	243	97	470
NORTH TEXAS										
Eastland County	...	5	73	13	91	...	8	80	5	93
Stephens County	...	6	21	15	42	...	6	22	14	42
Texas Panhandle	...	176	381	72	629	...	179	393	43	615
Mexia District	...	16	35	6	57	...	10	43	19	72
E. Tex. Wildcats	...	127	133	38	298	...	6	6	14	26
W. Tex. Wildcats	...	5	6	11	22	...	162	368	95	625
Wichita Falls	...	148	389	108	645	...	100	161	33	294
Total N. Texas	...	483	1038	263	1784	...	480	1055	250	1785
GRAND TOTAL	161	754	2210	586	3711	173	721	2263	548	3704

Completions in Oklahoma and Kansas, Week Ending Sept. 4

Company	Well No.	Location	Depth	Initial Prod.
		OKLAHOMA		
		Beckham County		
Duke	1	NWc SW SE 25-8-22W	T.D. 1070	Dry
Duke	1	SEc NE NE 25-8-22	T.D. 1310	Dry
		Caddo County		
Gorton	6	C NE SW 12-5-9W	T.D. 2410	Dry
		Carter County		
Cameron et al	1	NEc SW NE 3-2-3W	2753–3188	42
Wirt Franklin	1	SWc NE 3-2-3W	1550–2217	450
Skelly	1	SWc NW 17-22	2031–2502	40
Magnolia	12	SWc SE NE 23-2-3	T.D. 1335	Dry
		Comanche County		
Westheimer et al	1	SWc NW NW 19-2-9W	T. S. 1843	235
Mid-Kans	1	SWc NE 21-4-10W	T.D. 2320	Dry
Clyde Becker	1	NEc NW 30-4-10	T.D. 2513	Dry
Cochran et al	1	C NE NW 32-3-10W	T.D. 2261	Dry
		Cotton County		
Lindsey	1	SEc NW 12-4-10W	T.D. 2500	Dry
		Creek County		
Gled	4	NWc NE NW SW 13-19-8E	2400–2410	150
Gled	5	NEc NW SW 13-19-8	1600–1606	100
Magnolia	3	NWc SW SE 32-18-7	2690–2725OWD	20
Magnolia	1	SWc SE SW 32-18-7	2690–2714	15
Savoy	3	SE NE NW 23-17-8	2328–2350	30
Mid-West et al	2	SEc SW NE 17-19-9E	2245–2251	2M
Harwell et al	1	SEc NE SW 3-17-9	2003–2041	110
Texas	4	SWc SE SE 3-17-9	2040–2070	35
Roxana	2	NEc NW NE 10-17-9	2068–2103	135
Skelly	1	SEc NW SW 32-17-10	2703–2709	330
Overless et al	1	NWc 34-17-11	1752–1815	5
Porter et al	1	NEc NW SW 14-16-11	1820–1850	5
Wood	1	NWc SE 25-14-9	2017–2067	2M
Gledden et al	1	NEc SW NE 4-19-10	2238	Dry
Hivick et al	2	NWc SW NE 4-19-10	T.D. 2430	Dry
		Garfield County—Garber		
Mid-Cont-Marland	64	NWc NE SE 13-22-4W	3572–3613	831
Sinclair	25	SEc SW NE 13-22-4W	3666-3694OWD	500
Sinclair	54	SE SW NE NE 13-22-4W	2885–2888	125
Sinclair	55	SE NE SW NE 13-22-4	3085–3093	110
		Garvin County		
Magnolia	13	NWc SW 16-1-3W	1555–1560	16
Carter	8	SWc SE SW NW 17-1-3W	1602–1608	45
Texas	13	SWc SE NE 17-1-3	1602–1608	45
Magnolia	1	NWc NE NW NE 20-1-3W	1865–1881	60
Tex-Pac	1	NEc SW 35-3-2E	T.F. 2480	Dry
		Hughes County		
Independent	3	NWc SW SE 26-9-9E	3290–3336	340
Gypsy	3	NWc SE SE 27-9-9	3315–3326	90
Transcontinental	1	NEc NW 35-9-9	3325–3369	230
Amarada	5	SEc NW NE NW 5-7-8E	3938–3998	1068
		Jefferson County		
Gypsy	30	CWL SE NW 33-6-5W	1340-T.D.	30
Gypsy	31	CSL SW NE 33-6-5W	1264-1278	125
		Kay County		
Ark. Fuel	4	SEc 4-27-1W	3419–3425	212
		Lincoln County		
Magnolia	2	SWc NE SW 8-15-6	4076–4077	320
		Muskogee County		
Bradley	2	CNL NW SW 5-14-19E	650– 672	30
		Noble County		
Magnolia et al	1	NEc NW NW 2-21-2W	T.D. 5108	Dry
		Nowata County		
Prairie	16	NWc NE SW 31-25-17E	438– 468	50
		Okfuskee County		
Atlantic	1	SEc SW NE 35-11-9E	2839–2850	150
Ravel et al	1	NEc SE SW 23-11-11	1618–1662	5
Amarada	2	NEc SW SE 17-12-10	T.D. 3118	Dry
Link	1	NWc 3-11-10	T.D. 3975	Dry
		Okmulgee County		
Swindler	8	CWL SE NE 25-13-11	2467–2486	60
Texas	5	CWL SW SE 16-15-14	2370–2379	360
Texas	14	NEc NW NE 21-15-14	2261–2264	240
Twin State	5	NWc 22-15-14E	2280–2289	25
Hutchinson	2	CNL S½ SE 1-14-14	1623–1631	50
Henry	1	NW NE SW NW 5-15-12	2923	Dry
Kessler	1	SWc SE SW 19-14-12	T.D. 2817	Dry
Parks	5	CW L SE SE 32-14-15	T.D. 2047	Dry
Morgan	6	SEc NE NE 13-11-13	1863–1912	1M
		Osage County—Burbank		
Phillips	6	NE SW NE 12-27-5E	2985–3027	150
Phillips	11	SW NE NE 12-27-5	2960–3007	250
Phillips	10	SE NW SW 7-27-6	2960–3000	200
Lewis	8	SE NW SE 21-26-6	2933–2965	352
Lewis	9	SE SW SE 21-26-6	2913–2944	300
		Osage County		
Barnsdall	42	NW SE NW 35-29-11	884– 916	100
Pure	89	SW NW NE 11-27-10	1270–1305	200
Barnsdall	16	NW NE SE 5-20-12	1225–1350	30
Gillespie	6	CSL NE 5-20-12	1340–1365	20
Blackwell	1	SEc NW 15-29-10	T.D. 1733	Dry
Tidal Osage	18	NWc SE 7-28-7E	T.D. 2860	Dry
Skelly	3	NW SE NW 2-27-5E	T.D. 3035	Dry
Gypsy	1	NEc SE 36-2	T.D. 3610	Dry
Carter	1	SWc NW NE 10-25-8E	T.D. 2930	Dry
Warwick	1	SEc NW 24-21-9	T.D. 2743	Dry
		Pawnee County		
Devonian	2	SW SE NW 35-22-6E	2670–2684	15
Fern	3	NEc SW NW 22-20-6E	3070–3097	35
Magnolia	1	NEc SE 16-22-4E	T.D. 4140	Dry
Devonian	1	SWc NE 35-22-6E	T.D. 2917	Dry
		Payne County		
Gypsy	1	NEc NW 27-18-3E	T.D. 4725	Dry
		Seminole County		
Searight et al	3	NWc NE SE 33-10-6	4089–4114	625
Carter	1	SWc NW SW 34-10-6	4016–4103	3792
		Tulsa County		
Linden et al	1	SWc 10-19-14 E	T.D. 1305	Dry
Anthony	2	NWc SE NW 3-16-12	T.D. 1750 OWD	Dry
		KANSAS		
		Butler County		
Empire	31	C NE NW NW 29-28-4E	2471–2474	130
Templeman et al	1	C NE NE SW 30-25-7	T.D. 2820	Dry
Patton	1	C SW SW NW 14-27-5E	T.D. 3190	Dry
Connell et al	1	C NW SW NE 19-27-7E	T.D. 2786	Dry
Empire	3	C NW SW NE 27-27-7E	T.D. 2850	Dry
		Chase County		
Empire	1	C SE NW 29-18-7	1105–1161	5M
		Cowley County		
Gypsy	10	C NW NE NW 24-32-4	2966–3005	40
Forester et al	1	NWc NE 4-33-7	2419–2434OWD	¼M
		Geary County		
Liberty-Tex	1	C NE NE NW 30-13-6E	T.D. 2412	Dry
Liberty-Tex	1	C NE NE NE 9-12-6	T.D. 689	Dry
		Greenwood County		
Simmons et al	10	C SE NE SE 4-22-12	T.D. 1824	Dry
Manhattan	1	C SE NW NE 12-23-8	T.D. 2500	Dry
White Eagle	2	C NW SE SE 19-23-9	T.D. 2717	Dry
Manhattan	1	C NE NE SE 36-24-10	T.D. 2225	Dry
Stark et al	1	C SE SE SW 13-24-11	T.D. 1836	Dry
Peerless	1	C NW NE 33-24-11	T.D. 1945	Dry
Day et al	4	C NE SE SW 1-22-10	1980–2014	100
Syndicate	5	C SW NW SW 1-22-10	1980–2037	400
Empire	11	C NE NE SE 6-22-10	2228–2278	40
Phillips	8	C NW NE SW 12-22-10	2075–2122	100
Empire	12	C NW SW NE 14-22-11	1883–1914	100
Empire	7	C NE SE SE 4-22-12	1826–1832	25
Simmons et al	6	C NE NW SE 4-22-12	1790–1820	200
Phillips	3	C SE SE NE 5-22-12	1863–1911	10
McGinnis et al	9	C NW NW SW 30-24-11	1794–1824	400
McGinnis et al	10	C SW SW SW 30-24-11	1820–1844	200
		Lyon County		
Ritchey-Moore	1	C NW NW NE 32-18-10	T.D. 2353	Dry
Sheedy et al	13	C NE SW SW 31-21-10	T.D. 2400	Dry
		Marion County		
Sheedy-Empire	6	C SW SW NE 13-21-3	2360–2361	300
		Reno County		
Tatlock et al	1	C SE SE SW 30-26-6W	T.D. 4196	Dry

rapidly in the field with little hard luck bothering contractors. In Section 35 Sinclair Oil & Gas Co. has one well drilling at 2602 feet which was spudded in on August 13. The rotary has thus made an average of 124 feet of hole per day since spudding. This is not an exceptional record in that area. The Tidal Oil Co., for example, has three wells drilling below 2000 feet in its tract which offsets the discovery to the west. With continued good luck it is expected that some of these wells will begin to come in about October 1, with others following before the middle of the month.

Seminole City is the scene of feverish activity these days and the field is no less busy. Locations are being made and rigs started so rapidly that scouts find it difficult to keep track of them all. The accompanying map of 12 sections in township 9 range 6 posted up to September 3 shows 118 operations in progress. Two wells are producing from the Wilcox sand and 16 from the Hunton lime. Of the Hunton lime wells five are now being deepened.

There are now 56 drilling wells in the 12 sections surrounding the two Wilcox wells, 21 rigs being built and 23 locations made.

Following is a tabulation showing production of the field for the 24 hours ending Sept. 3:

Company	Section	Production	No. Wells
Amerada	23	200	1
Amerada	24	off	1
Barnsdall	24	1763	3
Carter	24	off DD	1
I.T.I.O.	S½NE 24	75	3
I.T.I.O.	W½SE 24	263	3
Mid-Continent	24	1180	1
Tidal	24	456	2
Independent-Garland	26	4584	1
Gypsy	24	3851	1
Mid-Continent	14	115	1
Total		13,272	18

Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

Mid-Continent Refinery Operations Week Ended Sept. 3 (By Telegraph)

	Kansas		Oklahoma		North and Central Texas		North La.-Ark.		Totals Week Ended Sept. 3		Totals Week Ended Aug. 6
Plants Reporting	23		46		41		14		124		124
Da. Cap. (Bbls.)	98,200		165,900		144,300		53,700		462,100		462,100
Da. Av. Crude Runs	60,841	+ 2.3	106,077	— 2.0	65,328	+ 1.5	56,399	—74.0	288,645	— 3.0	273,888
Da. Av. Other Oils	7,507	+ 5.1	3,337	.....	5,326	— 8.2	1,308	+107.9	17,478	+42.5	12,931
GASOLINE—Gallons											
Stocks, Aug. 27	8,548,659		21,054,102		13,030,665		3,203,776		45,837,202		49,477,527
Prod. 8-27-9-3	9,642,126	+ 4.9	15,495,712	— 3.1	7,169,516	— 6.5	4,016,910	—11.8	36,324,264	— 2.9	33,559,139
Ship. 8-27-9-3	9,645,972	+14.8	15,646,740	—11.2	8,408,786	+ 9.1	4,517,226	+ 6.5	38,218,724	+ 0.6	35,316,794
Stocks, Sept. 3	8,544,813	— 0.1	20,903,074	— 0.7	11,791,395	— 9.5	2,703,460	—15.6	43,942,742	— 4.1	47,719,872
Ratio Sales to Prod	100.04%		101.0%		117.3%		112.5%		105.2%		105.2%
KEROSENE—Gallons											
Stocks, Aug. 27	2,226,932		3,111,167		1,529,155		843,502		7,710,756		10,046,519
Prod. 8-27-9-3	1,740,996	+12.6	2,772,535	+ 2.9	1,846,079	+54.0	519,803	—43.0	6,879,413	+ 8.3	6,009,026
Ship. 8-27-9-3	1,773,889	+55.6	2,733,403	—14.0	1,583,452	— 1.1	854,269	+49.4	6,945,013	+ 7.0	6,674,713
Stocks, Sept. 3	2,194,039	— 1.5	3,150,299	+ 1.3	1,791,782	+17.2	509,036	—39.7	7,645,156	— 0.9	9,380,832
Ratio Sales to Prod	101.9%		98.6%		85.8%		164.3%		101.0%		111.1%
STOVE DISTILLATE—Gallons											
Stocks, Aug. 27	4,523,568		3,402,402		777,322		225,288		8,928,580		8,578,451
Prod. 8-27-9-3	660,736	+38.3	433,971	+ 9.1	344,664	+42.5	31,962	—18.8	1,471,333	+27.2	1,546,263
Ship. 8-27-9-3	445,929	— 4.2	93,577	—73.6	269,960	—63.0	65,772	—62.5	875,238	—49.2	1,441,787
Stocks, Sept. 3	4,738,375	+ 4.7	3,742,796	+10.0	852,026	+ 9.6	191,478	—15.0	9,524,675	+ 6.7	8,682,927
Ratio Sales to Prod	67.5%		21.6%		78.3%		205.8%		59.5%		93.2%
***STOVE DISTILLATE—Gallons**											
Stocks, Aug. 20	4,511,153		3,358,546		1,264,758		361,138		9,495,595		7,504,576
Prod. 8-20-8-27	477,697	—15.7	307,851	— 3.2	241,902	— 8.1	39,354	—78.7	1,156,804	—18.8	1,446,522
Ship. 8-20-8-27	465,282	+ 1.2	353,995	+36.9	729,338	+203.5	175,204	+18.4	1,723,819	+54.4	972,647
Stocks, Aug. 27	4,523,568	+ 0.2	3,402,402	+ 1.3	777,322	—38.6	225,288	—37.7	8,928,580	— 6.0	7,978,451
Ratio Sales to Prod	97.4%		88.9%		301.4%		445.1%		149.0%		67.2%
GAS OIL—Gallons											
Stocks, Aug. 27	9,452,311		31,745,527		9,039,986		2,735,096		52,972,920		56,992,055
Prod. 8-27-9-3	1,893,370	— 0.6	1,387,921	+242.0	651,379	+89.3	2,527,784	— 2.7	6,460,454	+23.0	5,444,211
Ship. 8-27-9-3	3,291,450	+174.8	1,543,366	—12.8	281,014	+3731.7	2,910,918	+ 7.7	8,026,748	+41.4	9,015,985
Stocks, Sept. 3	8,054,231	—14.8	31,590,082	— 0.5	9,410,351	+ 4.1	2,351,962	—14.0	51,406,626	— 3.0	53,420,281
Ratio Sales to Prod	173.8%		111.2%		43.1%		115.2%		124.2%		165.6%
FUEL OIL—Gallons											
Stocks, Aug. 27	10,146,652		66,600,818		19,008,008		8,867,094		104,622,572		96,437,852
Prod. 8-27-9-3	5,018,132	— 6.9	7,192,598	— 6.8	8,034,069	— 4.3	9,039,640	—18.5	29,284,439	—10.1	29,900,320
Ship. 8-27-9-3	5,343,595	+32.4	7,006,973	+22.0	7,411,905	— 8.4	10,631,880	+ 7.1	30,394,353	+ 9.4	27,141,675
Stocks, Sept. 3	9,821,189	— 3.2	66,786,443	+ 0.3	19,630,172	+ 3.3	7,274,854	—18.0	103,512,658	— 1.1	99,196,497
Ratio Sales to Prod	106.5%		97.54%		92.3%		117.6%		103.8%		90.8%

+ or — columns are % of change over previous week.

*Omitted in Last Week's Issue.

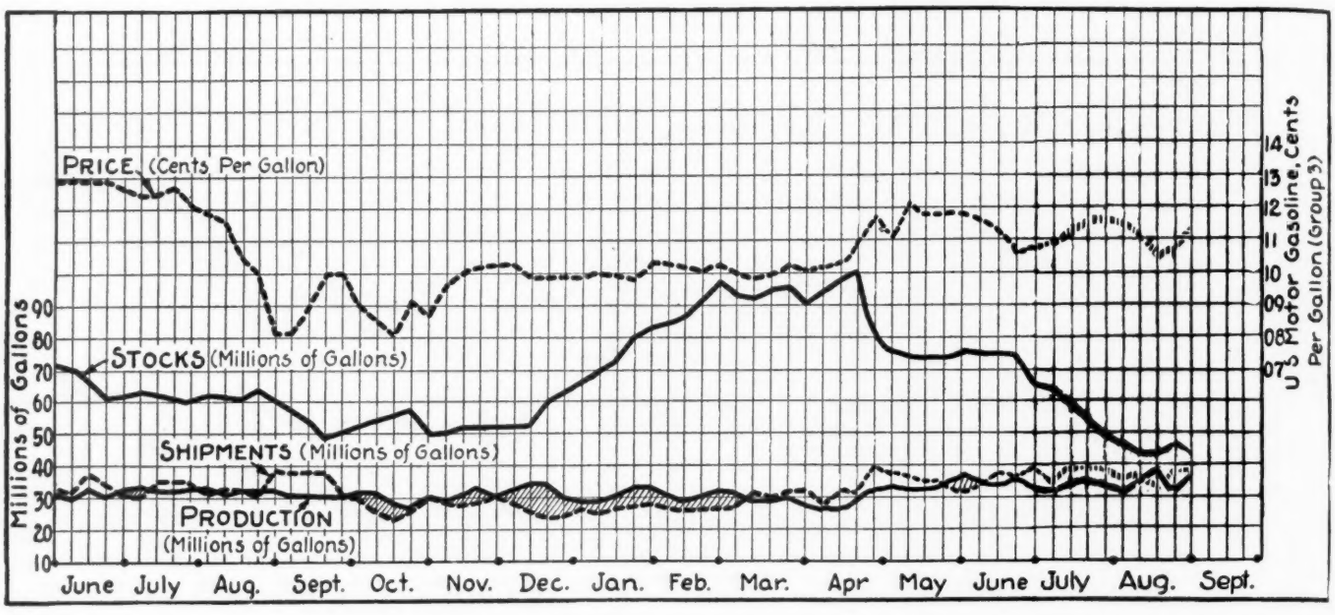
Gasoline Produced by Various Methods, Week Ended Sept. 3

	Kansas	% of Total	Oklahoma	% of Total	Texas	% of Total	Louisiana-Arkansas	% of Total	TOTAL	% of Total
Straight Run	6,602,376	68.5	9,861,962	63.7	5,841,382	81.5	1,319,252	32.8	23,624,922	65.0
Cracked	2,555,406	26.5	4,468,964	28.8	1,067,532	14.9	2,292,064	57.1	10,383,966	28.6
Natural	484,344	5.0	1,164,786	7.5	260,652	3.6	465,594	10.1	2,315,376	6.4
	9,642,126		15,495,712		7,169,516		4,016,910		36,324,264	

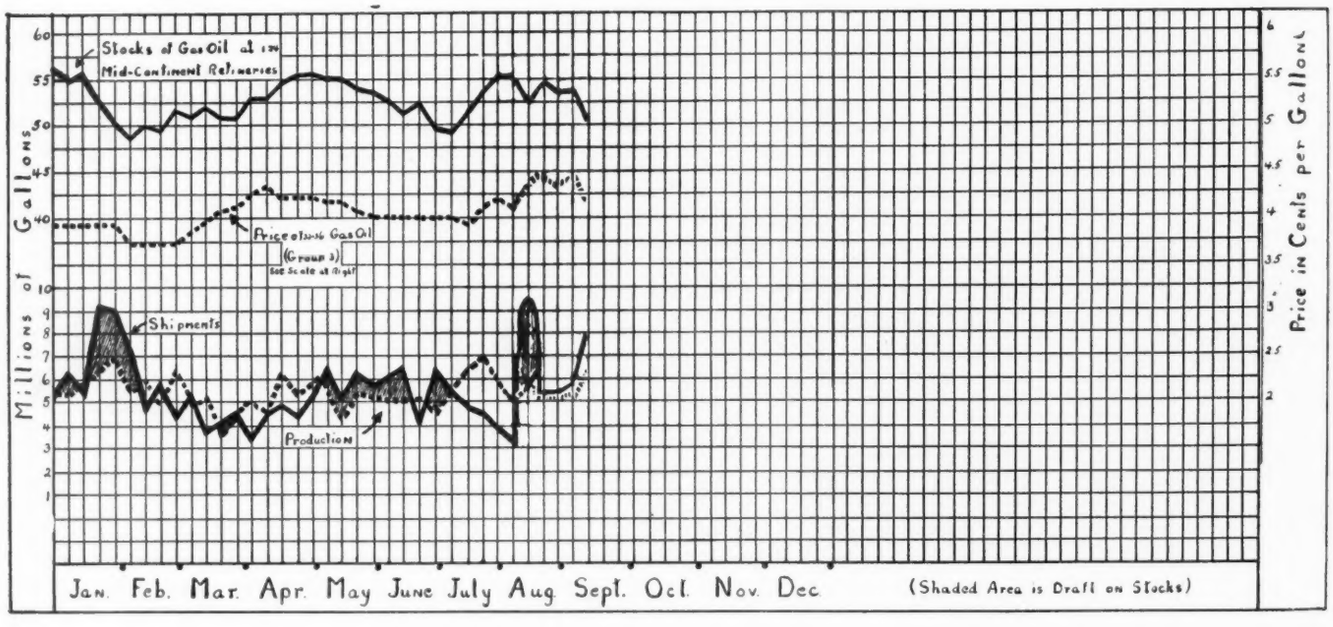
Barometer of Mid-Continent Refinery Market—Week Ending Sept. 3

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 124 Plants to National Petroleum News

GASOLINE


PRICE (Cents Per Gallon)
STOCKS (Millions of Gallons)
SHIPMENTS (Millions of Gallons)
PRODUCTION (Millions of Gallons)
Millions of Gallons
U.S. Motor Gasoline, Cents Per Gallon (Group 3)
June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr May June July Aug. Sept.

GAS OIL


Stocks of Gas Oil at 139 Mid-Continent Refineries
Price of 43-56 Gas Oil (Group 3)
See Scale at Right
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Jan. Feb. Mar. Apr. May June July Aug Sept. Oct. Nov. Dec
(Shaded Area is Draft on Stocks)

Gasoline Stocks Cut 2,000,000 Gallons More

Staff Special—By Telegraph

TULSA, Sept. 7

GASOLINE stocks at 124 Mid-Continent refineries were reduced nearly 2,000,000 gallons during the week ended Sept. 3, according to reports gathered by National Petroleum News. On that date total reserves in storage at the reporting plants which have 60 per cent of the operating capacity in the Mid-Continent, were only 43,943,742 gallons. At the rate of shipment maintained during the week these stocks represented only eight days' supply, the lowest point reached by the group in the last two years.

Shipments of gasoline increased 300,000 gallons, as compared with the previous week, rising to 38,218,724 gallons, or within 2,000,000 gallons of the peak

Summary for the Month

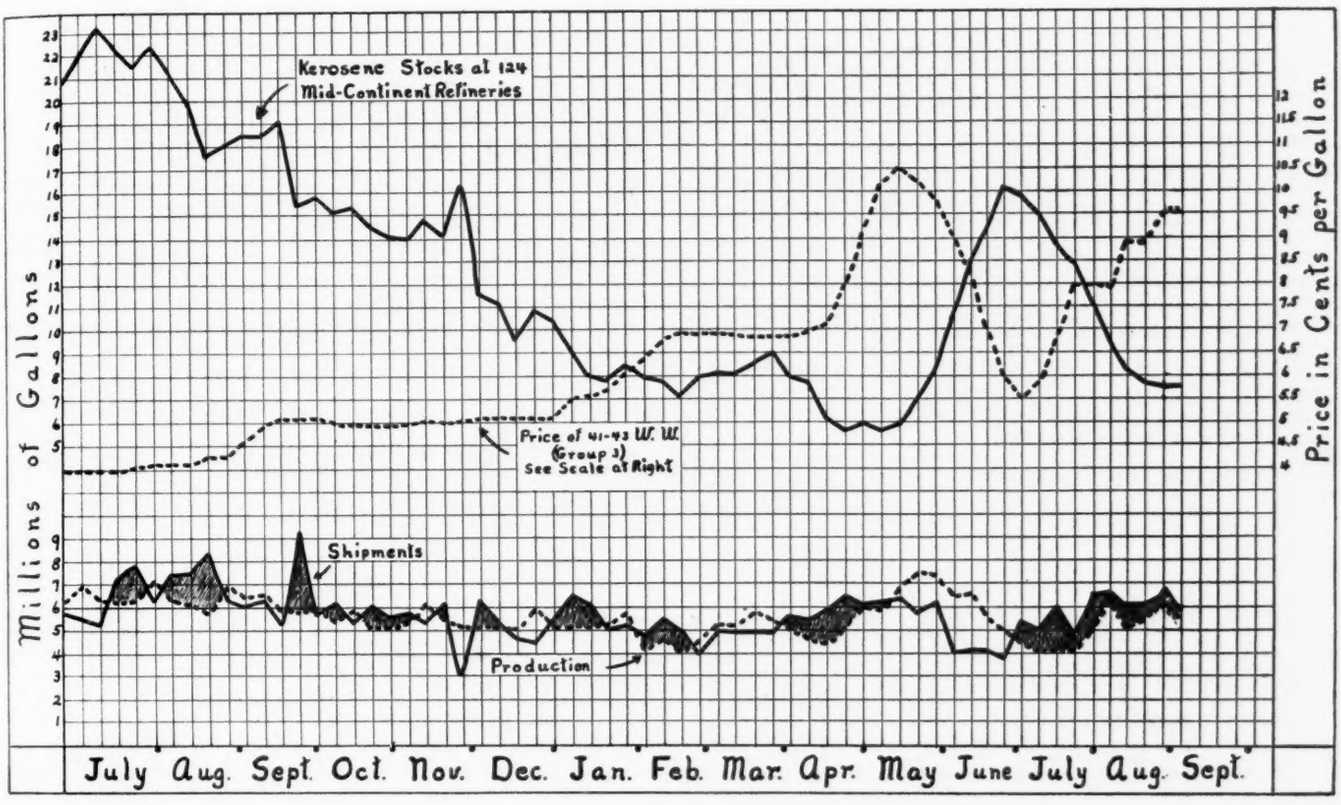
Production and shipments, all reporting refineries, for four weeks ended Sept. 3. Change in stocks figured from Aug. 6.

	Gallons
Gasoline	
Production	145,335,792
Shipments	149,112,922
Net change in stocks	—3,777,130
Ratio Sales to production	102.6%
Kerosene	
Production	24,218,262
Shipments	25,953,938
Net change in stocks	—1,735,676
Ratio sales to production	107.2%
Stove Distillate	
Production	5,588,819
Shipments	4,747,071
Net change in stocks	841,748
Ratio sales to production	84.9%
Gas Oil	
Production	21,722,326
Shipments	23,735,981
Net change in stocks	—2,013,655
Ratio sales to production	109.3%
Fuel Oil	
Production	125,690,114
Shipments	121,373,953
Net change in stocks	4,316,167
Ratio sales to production	96.6%

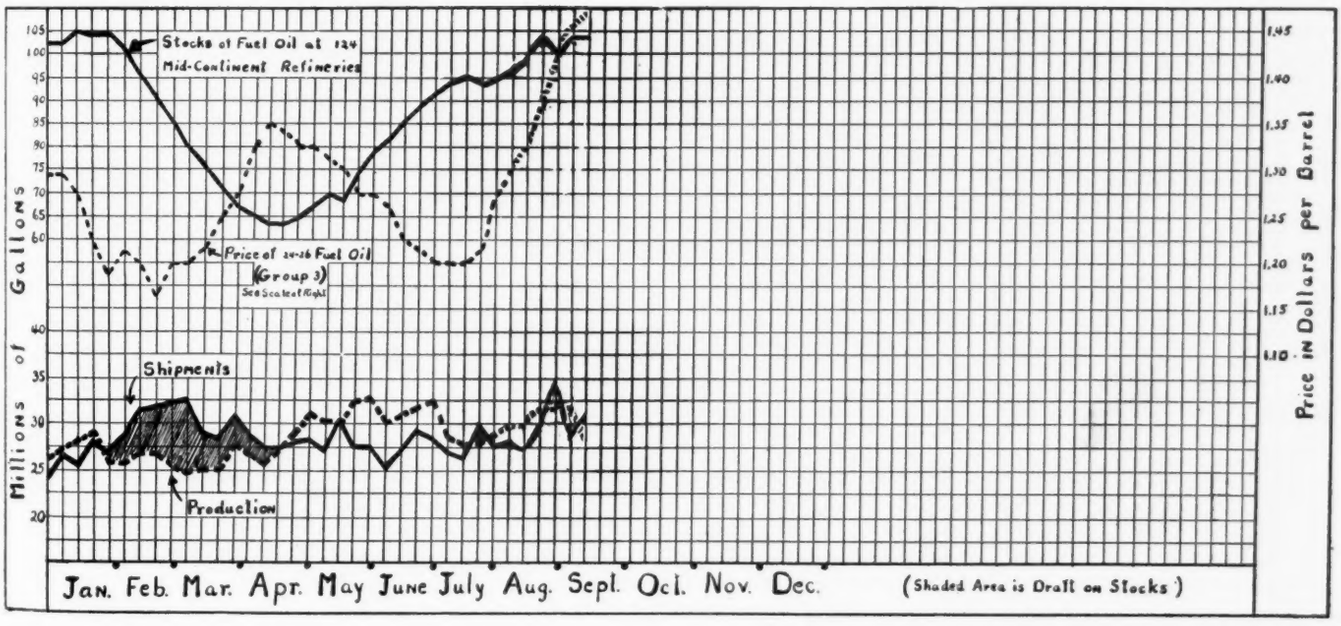
Barometer of Mid-Continent Refinery Market—Week Ending Sept. 3

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 124 Plants to National Petroleum News

KEROSENE


Kerosene Stocks at 124 Mid-Continent Refineries
Price of 41-43 W. W. (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept.

FUEL OIL


Stocks of Fuel Oil at 124 Mid-Continent Refineries
Price of 20-26 Fuel Oil (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price in Dollars per Barrel
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
(Shaded Area is Draft on Stocks)

shipments of the year reached in the week ended July 30.

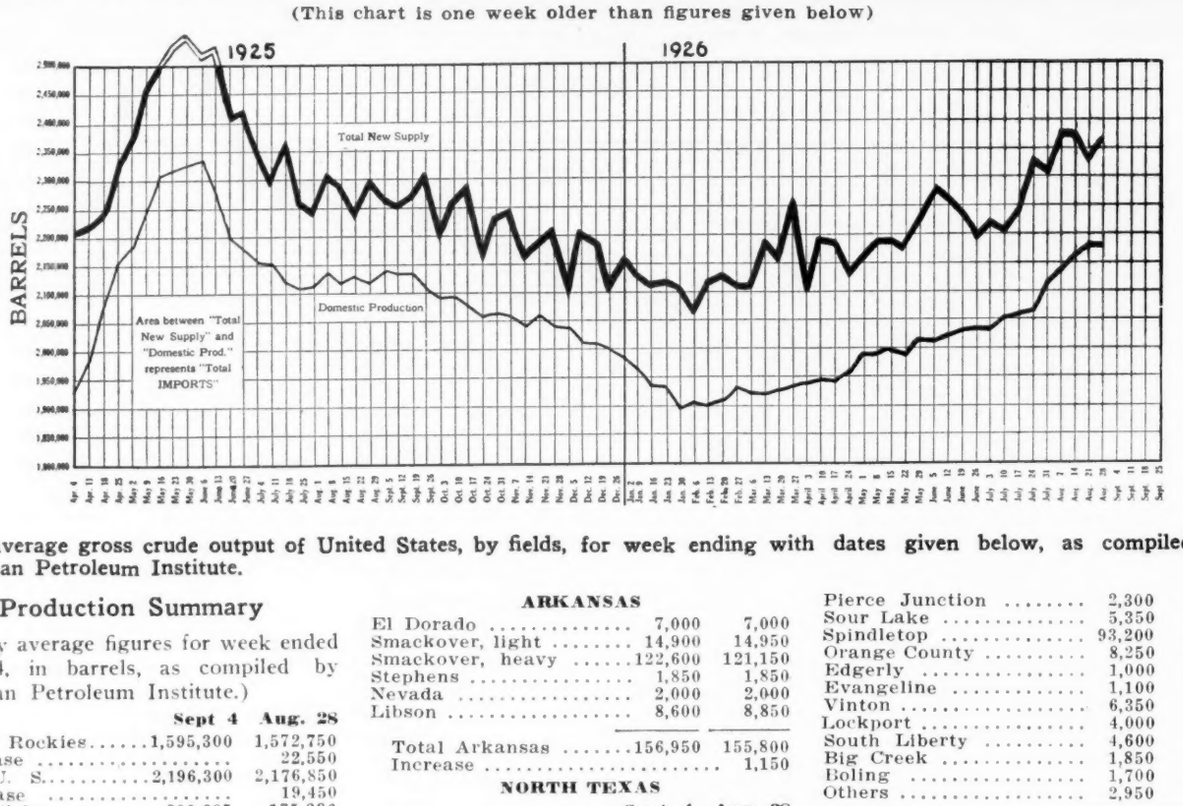
Daily average charges of fresh crude to refiners' stills were reduced 9000 barrels to 288,645 barrels but charges of run oils were increased 5000 barrels making a net reduction in daily average runs of 4000 barrels. As a result production of gasoline was reduced more than 1,000,000 gallons to 36,324,264 gallons.

The excellent market for kerosene during recent weeks, is beginning to have a marked effect on the volume of production. During the week ended Sept. 3 refiners increased their production of burning oils 500,000 gallons or 8.3 per cent to a total of 6,879,413 gallons. This is approximately as large a production of kerosene as output early last spring when the price of 41-43 water white jumped to 10 cents a gallon resulting in a heavy decrease in shipments. During the last week shipments increased another 500,000 gallons to 6,945,013 gallons causing another slight reduction in stocks to 7,645,156 gallons.

Shipments of stove distillate fell sharply to 875,238 gallons while production was increased slightly to 1,471,333 gallons.

Daily Average Crude Oil Production and Imports

(This chart is one week older than figures given below)



Daily average gross crude output of United States, by fields, for week ending with dates given below, as compiled by American Petroleum Institute.

Production Summary

(Daily average figures for week ended Sept. 4, in barrels, as compiled by American Petroleum Institute.)

	Sept 4	Aug. 28
East of Rockies	1,595,300	1,572,750
Increase		22,550
Total U. S.	2,196,300	2,176,850
Increase		19,450
Crude Oil Imports	200,285	175,286
Increase		24,999
Total Crude Supply	2,396,585	2,352,136
Increase		44,449

OKLAHOMA

	Sept. 4	Aug. 28
North Braman	10,900	12,300
South Braman	8,050	8,650
Blackwell	4,250	4,250
Hubbard	2,100	2,500
Thomas	1,850	2,400
Tonkawa	39,700	37,250
Garber	31,400	33,400
Burbank	48,600	49,200
Osage, outside Burbank	34,300	34,200
Watchorn	2,850	2,800
Cushing	21,550	21,600
Yale Jennings	12,850	13,250
Davenport	6,700	6,900
Bristow-Slick	27,850	28,000
North Okmulgee	17,400	17,300
Lyons-Deaner	3,950	3,950
Stroud	2,000	2,050
Cromwell	15,900	16,200
Papoose	10,250	10,150
Wewoka	32,350	31,350
Duncan district	7,500	7,450
Graham	10,000	9,950
Fox	5,800	5,800
Healdton	14,850	14,900
Hewitt	11,550	11,900
Seminole	15,650	13,900
Others	66,950	67,100
Total Oklahoma	467,100	468,300
Decrease		1,200

KANSAS

Greenwood County	44,800	45,100
Florence-Covert	1,950	2,000
Peabody-Elbing	4,100	4,100
Eldorado-Towanda	13,900	13,850
Augusta-Fox-Bush	4,850	4,850
Rainbow Bend	4,350	4,050
Russell	5,500	5,200
Others	33,500	33,100
Total Kansas	112,950	112,250
Increase		700

NORTH LOUISIANA

Homer	5,500	5,550
Haynesville	9,500	9,500
Caddo, light	9,850	10,000
Caddo, heavy	3,000	2,850
De Soto, Red River	4,150	4,200
Elm Grove	550	550
Bellevue	2,000	2,000
Cotton Valley	7,350	7,950
Urania	14,900	14,300
Total North Louisiana	56,800	56,900
Decrease		100

ARKANSAS

El Dorado	7,000	7,000
Smackover, light	14,900	14,950
Smackover, heavy	122,600	121,150
Stephens	1,850	1,850
Nevada	2,000	2,000
Libson	8,600	8,850
Total Arkansas	156,950	155,800
Increase		1,150

NORTH TEXAS

	Sept. 4	Aug. 28
Burkburnett	11,200	11,350
Electra	16,000	16,200
Iowa Park and K-M-A	4,400	4,400
Wilbarger	14,000	14,200
Hutchinson County	108,500	105,950
Balance Panhandle	7,550	7,650
Petrolia	550	500
Archer County	30,500	30,900
Others	4,600	4,600
Total North Texas	197,300	195,750
Increase		1,550

EAST CENTRAL TEXAS

Mexia	11,700	11,950
Currie	800	800
Richland	1,500	1,500
Corsicana-Powell	26,700	26,950
Wortham	6,900	7,000
Nigger Creek	19,200	14,800
Total East Central Texas	66,800	63,000
Increase		3,800

WEST CENTRAL TEXAS

Stephens County	11,300	11,250
Eastland County	5,750	5,750
Desdemona	1,750	1,750
Young County	6,300	6,450
Brown County	9,800	9,850
Palo Pinto County	450	450
Callahan County	4,200	4,200
Shackelford County	8,900	8,750
Reagan County	28,450	28,250
Crane & Upton Counties	8,950	6,850
Others	8,350	8,250
Total West Central Texas	94,200	91,800
Increase		2,400

SOUTHWEST TEXAS

Luling	22,000	21,800
Laredo District	18,000	17,600
Somerset	2,000	2,000
Lytton Springs	4,050	4,100
Piedras Pintas	150	150
Others	500	500
Total Southwest Texas	46,700	46,150
Increase		550

GULF COAST

Goose Creek	10,100	10,350
Hull	16,500	14,800
Saratoga	1,350	1,350
Blue Ridge	1,500	1,300
Damon Mound	850	850
Ratson	1,350	1,350
West Columbia	9,200	9,050
Humble	4,000	4,000
Pierce Junction	2,300	2,200
Sour Lake	5,350	5,200
Spindletop	93,200	81,550
Orange County	8,250	7,750
Edgerly	1,000	1,000
Evangeline	1,100	1,100
Vinton	6,350	6,350
Lockport	4,000	4,050
South Liberty	4,600	4,850
Big Creek	1,850	2,000
Boling	1,700	1,750
Others	2,950	2,700
Total Gulf Coast	177,500	163,550
Increase		13,950

ROCKY MOUNTAIN

Wyoming

	Sept 4	Aug. 28
Salt Creek	46,700	48,400
Grass Creek	3,100	3,100
Elk Basin	850	800
Big Muddy	3,300	3,300
Lost Soldier	5,150	5,400
Rock River	2,700	2,600
Teapot Dome	1,300	1,050
Others	5,250	4,900
Total Wyoming	68,350	69,550
Decrease		1,200

Montana

Cat Creek	2,700	2,550
Sunburst	25,000	25,000
Others	200	200
Total Montana	27,900	27,750
Increase		150

Colorado

Moffat (Craig)	3,300	3,150
Fort Collins	3,800	3,850
Florence	500	500
Others	900	1,000
Total Colorado	8,500	8,500

New Mexico

Artesia	3,000	3,000
Hogback	700	700
Rattlesnake	1,050	750
Total New Mexico	4,750	4,450
Increase		300
Total Rocky Mountain	109,500	110,250
Decrease		750

CALIFORNIA

Santa Fe Springs	47,500	48,000
Long Beach	98,000	99,000
Huntington Beach	45,500	45,500
Torrance	28,000	28,000
Dominguez	22,000	21,500
Rosecrans	13,500	14,000
Inglewood	44,500	45,000
Midway-Sunset	94,500	94,500
Ventura Avenue	47,500	48,600
Others	160,000	160,000
Total California	601,000	604,100
Decrease		3,100

* * *

EASTERN

(Including Ill., Ind., Ky., Ohio, W. Va., Pa., and N. Y.)	109,500	109,000
Increase		500

Eastern Refiners to Hear About Improved Boiler Plant Practice

CLEVELAND, Sept. 4

REPORTS of what has been accomplished already by the cooperative boiler plant improvement campaign begun by the refiners at the National Petroleum Association at the spring meeting at Cambridge Springs, Pa., will be given at the forthcoming fall meeting of the association to be held at the Hotel Traymore, Atlantic City, Sept. 15-17.

As well as the customary reports on the association's activities during the year, there will be papers by distinguished speakers on such subjects as fire fighting, fire prevention, cost accounting in connection with refining operations and reducing costs of manufacturing.

The complete program follows. It is to be conducted throughout on daylight saving time which prevails in Atlantic City:

The Board of Trustees will meet in the room of Fayette B. Dow, Hotel Traymore, at 10:00 a. m., Wednesday, Sept. 15.

Wednesday Afternoon, Sept. 15
2:00 p. m.

Opening Address:

"Products and By-Products of Association Work," O. P. Keeney, Tide Water Oil Co., President.

Reading of Minutes (Note: The minutes will be read at the trustees' meeting and the reading at the general meeting will be dispensed with except as to such matters as any of the trustees or members may desire to bring to the attention of the meeting). Herbert C. Eaton, Mutual Refining Co., Recording Secretary.

Appointment of Nominating Committee:

"The Association's Finances," G. B. Hunter, Emlenton Refining Co., Treasurer.

"The National Petroleum Association Twenty Years Ago and Today," C. D. Chamberlin, General Counsel.

"Research and Development in the Oil Industry," Frank A. Howard, President, Standard Development Co.

The Fire Marshals:

A. "Who and What They Are," R. A. Wotowitch, Cities Service Co., Trustee in Charge, Department of Welfare and Insurance.

B. "New Lessons from an Old Hazard," Houston Dunn, Managing Director, The Fire Marshals' Association.

C. "The Fire Alarm Rings," Harry R. Lewis, Conewango Refining Co.

"A Good Year," Fayette B. Dow, Washington Counsel, National Petroleum Association.

Wednesday Evening
8:15 p. m.

Theater Party, R. A. Wotowitch, in charge. Ladies are invited. (Seats have been reserved, but tickets must be purchased before 5 p. m.)

Thursday Morning, Sept. 16
9:30 a. m.

B. B. Stroud, McKean County Refining Co., Presiding, Report of Nominating Committee; Election of Officers and Trustees.

"The Association's Adventure in Cooperative Engineering," B. B. Stroud, Trustee in Charge, Department of Manufacture.

"What I Have Learned from a Study of Twenty Boiler Houses," Herbert A. Ross, Mechanical Engineer of H. S. Bell's Organization.

Discussion: Every member who has participated in the cooperative purchase of engineering services is invited to discuss the results frankly.

"Cost Accounting's Relation to Manufacture," P. S. Tarbox, Independent Refining Co., Trustees in Charge, Department of Economics, Accounting and Statistics.

"Reducing the Costs of Manufacture," Jacob France, President, Midcontinent Petroleum Corp., Tulsa.

"Modern Stills," H. S. Bell, Woolworth Bldg., New York.

Board of Trustees Meeting: The newly elected Board of Trustees will meet at lunch, Hotel Traymore, at 1 p. m.

Thursday Evening
7:00 p. m.

Shore Dinner at Hackney's.

1. "As a Token of Our Friendship," anonymous.

2. "Experiences in Central Asia," illustrated by stereopticon and moving pictures, Kermit Roosevelt.

Fred G. Clark in charge. (Tickets must be purchased before 5 p. m., Wednesday. Busses will leave Hotel Traymore at 6:45). Ladies are invited.

Friday Morning, Sept. 17
9:30 a. m.

E. M. Lyons, Tiona Refining Co., Presiding.

"Better Trade Relations," E. M. Lyons, Trustee in Charge, Department of Trade and Commerce.

"A Traffic Department that Functions," Frank B. Fretter, President, National Refining Co., Trustee in Charge, Department of Traffic and Transportation.

"The Interstate Commerce Commission's Order for a General Investigation of Rates on Petroleum in Central, Trunk Line and New England Territories," Willis Crane, Traffic Attorney, National Petroleum Association.

"The New Policies of the Federal Trade Commission in Relation to Business," Hon. W. E. Humphrey.

"Avoidable Misunderstandings in Oil Tests," Fred G. Clark, Fred G. Clark Co., Trustee in Charge, Department of Standards and Tests.

"Discriminatory Legislation Against the Oil Industry," Sheldon Clark, Sinclair Refining Co., Trustee in Charge, Department of Legislation and Litigation.

Friday Afternoon
1:00 p. m.

Luncheon and Golf Tournament at the Sea View Golf Club. A. C. Woodman, Acewood Petroleum Co., in charge of Luncheon; S. P. Worthington, Tiona Petroleum Co., in Charge of Golf Tournament.

Presentation of Prizes.

Ladies are invited.

Committee in charge of Entertainment at Annual Meeting:

Fred G. Clark,
Chairman
A. C. Woodman
R. A. Wotowitch
S. P. Worthington

Barristers Form Branch On Mineral Law

CHICAGO, Sept. 4.—At the 1926 convention of the American Bar Association in Denver, that organization formed a new department called the Section of Mineral Law. It is headed by John C. Townes, Humble Oil & Refining Co., Houston, Texas. This is the ninth and newest section of the A.B.A. and like the others it is governed by four officers and a council of eight.

The purpose of the new organization is to form a forum where attorneys of oil and mining companies, or lawyers whose practices largely involve matters of mineral rights, may discuss topics of mutual concern. It is hinted that one of their logical activities will be in codifying and effecting uniformity in oil and gas leases. In fact two of the councilmen and one of the officers are members of the A.B.A. Conference Commission on Uniform State Laws.

William P. McCracken Jr., of the law firm of Montgomery, Hart & Smith, Chicago, is secretary of A.B.A. and recently was appointed assistant secretary of commerce of the United States in charge of aviation. At his office it is said that the new Section of Mineral Law is expected to strengthen the A.B.A. considerably by interesting a great many capable attorneys who heretofore have found little of value in A.B.A. activities.

The officers of the section are John C. Townes, chairman, Humble Oil & Refining Co., Houston; Gurney E. Newlin, vice-chairman, 935 Title Insurance Bldg., Los Angeles; Peter Q. Nyce, secretary, Albee Bldg., Washington, D.C., and W. H. Francis, treasurer, Box 1667, Dallas, Texas. The council is composed of Earle W. Evans of Wichita, Kan., J. B. Harold, Shreveport, La., Jefferson Chandler, Los Angeles, Calif., William H. Ferguson, Denver, Colo., John F. Whalen, Pottsville, Pa., Hugh H. Brown, San Francisco, Calif., C. B. Ames, Oklahoma City, Okla., and R. F. Grant, Cleveland, O. Messrs. Newlin, Evans and Chandler are members of the Conference Commission on Uniform State Laws.

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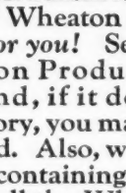
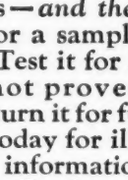


Type A
Tank Truck
Faucet



Type B
Tank Truck
Faucet

Type 24
Tank Truck
Faucet

Anti-Freeze
Valve

Type 12
Gooseneck
Open Hose Nozzle

Type 36
Quick Hose Coupling

Type 25
Loading Valve

Type 50
Wet Hose
Auto-Filling
Faucet

Type 26
Loading Valve

A. W. WHEATON BRASS WORKS
NEWARK, N. J.

Wheaton

Doherty Statement is Detailed Argument For Legality of Regulating Production

THE statement filed with the Federal Oil Conservation Board by Henry L. Doherty, head of extensive public utility and oil interests, in reply to the brief presented by Charles Evans Hughes on behalf of the American Petroleum Institute at the board's public hearing May 27 is principally:

Criticism of the preparation, presentation and logic of Mr. Hughes' statement:

Continuation by Mr. Doherty of his attacks on the Supply and Demand report of the Committee of Eleven of the American Petroleum Institute.

Further expounding of Mr. Doherty's proposal that the Federal Government has power through the defense clause of the Constitution to legislate concerning oil production: with criticism of the legal profession generally.

In the course of his statement—which covers 37 typewritten pages—Mr. Hughes suggests to the board it delay presentation of a report containing any conclusions until a conference has been held of from 10 to 20 of the leading petroleum technologists of the country to discuss and agree, if possible, upon advantages and savings to be gained from changes in present production methods.

This last Doherty statement was released for publication by the oil board Sept. 1. At the May 27th open hearing Mr. Doherty was prepared to debate these matters with Mr. Hughes on the floor, but the latter was forced to leave for another engagement immediately after reading his brief. Mr. Doherty secured leave from the board to present a statement later. He was, shortly thereafter, called to Mexico and forced to delay preparation of his statement, which was presented to the board about ten days ago.

Mr. Doherty criticizes those who have questioned the legality of government regulation of oil production, saying "The lawyers have been particularly irritating in this controversy and have attempted at every turn to prevent anything and everything from being given serious consideration on the grounds every proposal was illegal or unconstitutional."

Believing himself that the Federal Government has power to legislate as to the production of oil, Mr. Doherty states that, nevertheless, he is unable to understand how there is power in the Constitution for some of the laws that have been passed, going on to cite some of these, saying in conclusion that other citizens, like himself, will fail to be impressed with statements as to what cannot be done in the way of such legislation, when it has so recently been seen what is actually done along this line.

Answering on another tack, Mr. Hughes' argument against the constitutionality of measures regulating oil production Mr. Doherty points out that, if it is really true the Federal Government has no power to conserve oil and prevent waste, then our plan of government is very defective, through lack of power to do that which may be necessary for our national defense, "a disclosure which should be of vast importance to the American people," he concludes.

The Doherty Statement in Full

I WISH to thank the Federal Oil Conservation Board for giving me permission to make a written reply to the statement made by Judge Hughes so that I might emphasize and supplement the oral statement I made after Judge Hughes had read his brief and had excused himself from further attendance at the hearing on May 27th.

Those Interested in Petroleum Throughout The World Are Probably Watching The Work Of This Commission.

AT the time of your hearing I was in receipt of an invitation from the Republic of Mexico to visit the Capitol of Mexico so the officials of the Mexican Government interested in oil production, and the scientific men of the Mexican Government, could discuss directly with me the result of my work for the more efficient recovery of oil and gas. I decided to defer my reply to Judge Hughes until my return to the United States so that, in event anything of particular interest developed, I could incorporate it in my reply. Nothing having a direct bearing and of sufficient importance developed to warrent its incorporation in my reply, but I want to report that I found the people in Mexico City keenly interested in everything your Board is doing, and they are surprisingly well advised, so far as information has been published as to all of the matters brought out before your Board, and there can be little doubt that in all sections of the world, wherever people are interested in oil, the deliberations and actions of your Board are being watched with as keen an interest as by our own petroleum engineers in our American Oil Fields. I might even say that in some foreign countries I believe there is a keener interest in the discoveries disclosed to your Board of the condition of oil in a virgin pool and in the benefits that are already certain to accrue from improved methods of producing oil, than appears to be evidenced in our country, and I will not be surprised if these methods are adopted in other parts of the world before we are able to adopt them here.

Institute to Reply

NEW YORK, Sept. 2.—W. S. Farish, president of the American Petroleum Institute, commenting upon the statement filed with the Federal Oil Conservation Board by Henry L. Doherty, said:

"Press reports of the contents of Mr. Doherty's statement are meager and incomplete. They indicate that the statement is filled with error and inaccuracy. When I have received and read the complete text of the statement, a reply will be prepared and filed with the board at Washington."

Many Of The Leaders Of The Industry Are Violently Opposed to Any Change In Our Methods Of Producing Oil.

IT is common and almost universal knowledge to everybody having any interest in the work of your Commission that a majority of the business leaders of the Oil Industry are radically opposed to any changes in the present methods of producing oil and, consequently, the men of greatest vision in the Industry who actually know that conservation measures should be adopted, are unwilling to take an aggressive position in favor of conservation, knowing they will undoubtedly earn the antagonism of many important business leaders. I became committed to the need for conservation and the advocacy of a specific plan for conservation before I realized there would be opposition, or the extent and the intensity of the opposition that would develop, and, much as I regret having to differ with so many of the business leaders of the Industry, I have been compelled to maintain and defend my position at a great sacrifice, both from a business and a personal standpoint.

When It Was Proposed To Retain Judge Hughes I Was Promised That He Would Give Careful Consideration To My Plans.

WHEN Judge Hughes was retained by the Board of Directors of the American Petroleum Institute in connec-

tion with this matter, I was assured that I would be given ample opportunity to lay my views before him. The Board of Directors voted to retain Judge Hughes at their meeting in Los Angeles, on January 20, 1925. Weeks drifted by and no specific invitation was extended to me for a conference with Judge Hughes. In the meantime, your Board designated a date in May for a public hearing. I was compelled to attend an important business conference in Atlantic City for several days prior to the date of the hearing, and, as I had reason to believe that Judge Hughes' statement had been prepared for presentation to your Board, I telegraphed to your Board as follows:

Atlantic City, N. J.
May 18, 1926.

Federal Oil Conservation Board,
Washington, D. C.

"Several days ago I saw in the daily newspapers that Judge Charles E. Hughes would be heard by your Board on May 27th. After mature deliberation I hereby request permission to be present at this hearing and also be heard by your Board if unable to agree with the representations made by Judge Hughes.

Henry L. Doherty"

I sent the following telegram to the American Petroleum Institute:

Atlantic City, N. J.,
May 18, 1926.

R. L. Welch, Secretary,
American Petroleum Institute,
250 Park Avenue, N. Y.

I have just telegraphed the Federal Conservation Board as follows: "Several days ago I saw in the daily newspapers that Judge Charles E. Hughes would be heard by your Board on May 27th. After mature deliberation I hereby request permission to be present at this hearing and also be heard by your Board if unable to agree with the representations made by Judge Hughes," signed Henry L. Doherty. I am at a loss to know what representations Judge Hughes will make to the oil board and as he had made no request of me to learn what my position is I do not even know whether he understands what I am recommending. If you think anybody connected with the Institute would be interested in knowing what I have done I request you notify them.

Henry L. Doherty"

It was my belief when Judge Hughes was retained, that he would endeavor to make an independent and impartial study of the entire petroleum problem and advise your Board what it should do, and I felt certain that he would realize he could not do this without inviting the opinions from the leaders of the two schools of thought in this country—the one that believes in conservation of our natural petroleum resources, and the other that opposes such conservation measures. I also assumed that his first efforts would naturally be directed toward securing a reconciliation of the differences of opinion between the various members of the Institute's Board of Directors.

When I received no invitation or request to confer with Judge Hughes, I was forced to the conclusion that he felt it his duty either to defend what he believed was the views of the majority of the Board as best he could, or that his conclusions were in accord with my own, and if his views were in accord with mine, then his failure to confer with me could probably be explained by the fact that he believed his views would carry greater conviction with my opponents, if it were known that he had reached such conclusions without conferences with me. A judge is fully justified and warranted in giving a decision in favor of a contestant without listening to the arguments of that contestant, and often does give such a decision, but, of course, a judge is never justified in giving a decision against one contestant without giving that contestant a fair hearing. For the reasons which I have explained, I have been compelled from no choice of my own, to assume the leadership of one side of this controversy and in this particular case it would have been particularly impossible for any man to have reached a fair decision and to have given in turn a fair presentation of this matter without hearing both sides of an issue of this character and magnitude; that is to say, I hold that Judge Hughes could not have reached a decision that was fair, nor could he have made a proper presentation, without having given me an opportunity to lay my evidence and views before him. Everything points unmistakably to the fact that it was not the purpose of Judge Hughes to hear or acquaint himself with all phases of this controversy and then make an impartial presentation to your board, but he was, undoubtedly, told that the members of the Institute board were preponderantly against my position and he therefore, as a lawyer, very likely construed it his duty to make the best presentation he could to sustain the position of the majority members of the board.

It would have been useless for me to have insisted that Judge Hughes talk over this matter with me before the hearing. The old story, that you can lead a horse to water but you can't make him drink, would have been applicable in this case. If the Judge did not wish to get at the facts from both sides, it naturally would have served no useful purpose to have forced him to listen to me, and I would then have been unable to conclusively demonstrate the fact that he never intended to take up and consider the side of the controversy I represent, or else he was persuaded or prevented from doing so by my opponents. I think Judge Hughes was remiss in his obligations to your Board for having attempted to make a statement before you gentlemen without having first thoroughly canvassed all of the views readly available in the Petroleum Industry, and especially not to have canvassed the opposing views of the members of the Board of Directors of the Institute themselves, seems to me most inexcusable. This, in my opinion, has resulted in Judge Hughes making an unnecessarily long statement which has dragged in many points which were not matters of controversy at all, and, instead of harmonizing so far as possible and then setting out the views that could not be harmonized, he has simply contributed further confusion to the whole matter. His position has been unfair to a subject of vast importance to this nation: he was most unfair to the side that he did not hear, and unfair to your Board in having unnecessarily consumed your time and contributed so little of benefit to your work and, in the final analysis, I think his performance and his incomplete grasp of a big subject will have done the Petroleum Industry a great injury.

It is unbelievable to me that he and I could have met and discussed these matters without eliminating many of our seeming differences of opinion. I am now not only compelled to consume the time of your Board on differences of opinion that might have been eliminated, but I am compelled to consider matters which are entirely new to this controversy.

Judge Hughes Has Only A Partial Grasp Of The Problem And Then Only Of One Side Of The Controversy.

IT is apparent from a reading of Judge Hughes' statement, and specific instances can be cited in numerous places, that he has practically no real or substantial understanding of any of the important features of this problem, unless it be some of the objections of those who are resisting any change in our present methods. I am not one of those who regard Judge Hughes as a superman, but I do respect him and also respect the various prominent positions he has held, yet I hesitate to believe that his statement before your Board actually represents his own views after having given it personal and careful study. If such is the case, any enemy could inflict severe punishment upon him by simply republishing his own statement and giving it wide circulation as an example of the limitations of the ability of Judge Hughes.

Judge Hughes' Statement Is Apparently Nothing More Than His Own Rearrangement Of The Matters Handed Him By The Oil Lawyers

IT represents nothing new and I have heard the whole thing before from the oil men and I prefer to think that his statement to your Board represents simply nothing more than a hasty redictation of a mass of matter handed him by the lawyers for the oil companies who were anxious for him to take a certain position so that the posi-

tion they previously had taken would be endorsed by him, even though, in my opinion, they took this position with little forethought and should have long ago backed away from it. In my opinion they will have to back away from it in the long run, and the longer they remain in an erroneous position, the less gracefully will they be able to be publicly overruled. Judge Hughes has now loaned his prestige to this position and before the eyes of the whole world, and in doing so, he has loaned also the prestige of an ex-Justice of our Supreme Court and yet by no chance can this position, in my opinion, be eventually sustained. In fact, it is my belief that some of the oil lawyers have already privately backed away from all of their original views, but it will be easier for them to acknowledge this fact if compelled to do so after getting Judge Hughes in the same hole with them.

While the mere fact that Judge Hughes did not invite or request me to confer with him on this matter, should have been sufficient notice that his position at the hearing might take some surprising turn, I was wholly unprepared for the extreme position he took and wholly unprepared for many of the statements made in the document which he read.

In spite of the fact that his statement had been in print prior to the meeting, and had been distributed to the newspapers, I was given a copy of it only after the hearing was over and then not by Judge Hughes or any of my opponents but by an agent of your Commission. I had started in with the idea of preparing notes so that I could reply immediately after he ceased reading his statement, but I soon realized that it was far too lengthy for me to reply to properly, depending solely upon memory or upon such notes as I could make during the time he was reading his brief. I might add also that I was both surprised and disappointed when Judge Hughes announced immediately after concluding his statement, that his other engagements were such that he would have to be immediately excused from the hearing. On the whole, however, I concluded that in view of the length of his statement and his inability to remain at the hearing, it would be better for me to reply in writing.

Your Commission Has Shown Great Patience.

I SUPPOSE I should compliment and congratulate your Board for showing so much forebearance and patience with those who are coming before you and consuming your time and encumbering your records with voluminous testimony which is not responsive to the wishes and instructions expressed by the President in his letter appointing your Commission, but the subject is one of such vast importance to the welfare of this nation that I seriously question whether your forebearance and patience are justified. This subject is so important and the right to speak

In publishing in full the statement of Henry L. Doherty to the Federal Oil Conservation Board, this paper is carrying out its policy of giving the fullest possible publicity to the discussion on oil conservation. Since the start of the discussion which has, unfortunately, grown into heated controversy, this paper has urged the leaders of the oil industry and the American Petroleum Institute to do everything possible to make the discussion as thorough and as broad and take in as many people in the oil industry as possible. Also to see that the whole industry had full opportunity to hear and consider the discussion.

This paper has many times stated that the industry would have had a much better understanding of the subject and would have stood in a much better light before the government and before the public, had the leaders of the industry carried out this open door policy more fully.—EDITOR.

the truth is so important that it should not be placed in the background by the restrictions dictated by mere petty politeness. Those who are improperly prepared to testify before your Board or those who purposely desire to befog the inquiry, are doing an injustice to the subject, on account of its vast importance, and an injustice to those who are striving to advise you in strict response to the President's wishes and instructions. While I will endeavor to give as little offense as possible to those who are carelessly or consciously obstructing this work, nevertheless, I must, from now on, reserve the right to answer my opponents with sufficiently forceful statements to at least discourage continued careless statements on the part of those who assume their views and allegations will never be checked up or disputed, no matter how unjustified or absurd they may be. I feel that it is high time that some one serves notice that further loose talk wholly out of accord with the real facts cannot be permitted.

The Statements Made by Judge Hughes Astonish Me

REPLYING now more specifically to the statement read by Judge Hughes, I must confess that in many ways I was so astonished by some of the things contained in his statement that I am still somewhat at a loss to know how to reply to them. It was my understanding before this hearing was held that it was universally agreed that the report of the Committee of Eleven was so extremely fanciful and exaggerated that, by common consent, it was considered best for the good of the Industry to simply endeavor to drop this report from sight. It was an astonishing thing to me when I found that Judge Hughes' statement repeatedly referred to this report and gave the impression that he was completely endorsing it. The truth of the matter is that this report is hopelessly inexact and is so exaggerated in many ways as to be grotesque. It is true that a number of the men who took part in the drafting of this report still attempt to defend it, but so far as I know there is no one willing to risk his reputation for truthfulness and intelligence by coming out and saying that he believes that this book is truthful and accurate from cover to cover. In almost every case they want to exclude some or many parts of what appear in this book on the plea that these particular things are no part of the body of the report or for some reason or the other. It is a most novel idea to me that a group of men can cause a book to be issued that contains exaggerated and untrue statements and then studiously attempt to justify it, and resent criticism of it on the plea that much of it is true. None of us dispute the fact that a lot of what is printed in this book is true, but many of us do contend that in all important matters which should enable the casual reader to judge for himself of what the magnitude of our future petroleum supply may be, the report is not only inaccurate but is exaggerated to the point of being grossly misleading. The last thing I ever thought Judge Hughes would do would be to allow his clients to restate or reaffirm untrue evidence.

It is a mere waste of time, however, to argue about the accuracy of this report, unless those who wish to contend for its accuracy are first willing to vouch for the accuracy of all of the matter contained therein from cover to cover. There is probably no one who will do that but everyone who had any responsibility for the production of this book, if allowed to eliminate what they cannot vouch for as being true, should then be willing to say without reservation or equivocation, that the remaining portion is true.

If you start to point out what is untrue in the book, your opponent is apt to plead ignorance on that part of the report or to admit the inaccuracy of whatever part he finds you are prepared to disprove. The only way to get anywhere is to definitely insist that your opponent eliminate nothing, and thereby avoid discussion of it, except that which he definitely admits is untrue. This book is so contradictory that it needs no man of Judge Hughes' training and experience to realize that it is absurdly exaggerated and untrue, and I am at a loss to know how he can justify his seeming endorsement of it.

Judge Hughes' Seeming Endorsement of the Report of the Committee of Eleven Will Make It Necessary in My Opinion for this Commission to Say Whether this Report Is True or Not

WHILE I was willing to acquiesce in what seemed to be the general wish of the entire Industry, that as far

as possible we try and drop the report of the Committee of Eleven out of sight, I have been compelled on account of Judge Hughes' reference to this report to discuss that document in some detail in my reply to your Board. After reflection, I have concluded it was best that Judge Hughes has made it essential that this report be scrutinized and passed upon by your Board, for I have learned that it is being used in some institutions of learning as a text book, and, in view of its gross inaccuracy, it is like a poisoned well, exceedingly dangerous.

In view of the fact that the public should have reliable information regarding our remaining petroleum supplies, it seems to me impossible for your Commission to discharge its duties in this matter without passing upon the accuracy of the matter contained in this publication which has unquestionably had a circulation of many thousands of copies. If it contains inaccurate statements your Commission can not in my opinion discharge the duty you owe to the public except by pointing this fact out. Silence on your part will be represented to be an endorsement of the statements made in this book. As it has been filed with you as a matter of evidence, possibly your acceptance of it without questioning its accuracy, can be construed at least in part as an endorsement by you of its accuracy.

I shall not attempt to go into the inaccuracies and misstatements contained in this book because it would require a document almost as long as the volume itself. If, however, you can find any group of responsible oil men who will attempt to say that this book is true from cover to cover, I will be very pleased, if they challenge me to do so and if your Commission wishes me to do so, to analyze this report and show you where and how frequently it is inaccurate.

None of My Opponents Have Been Responsive to the Requests Made in the Letter of the President Appointing this Commission nor Responsive to the Voluntary Pledge Made by the Board of Directors of the American Petroleum Institute to President Coolidge

IN my oral statement to your Board, I endeavored to point out that I had been specific in my recommendations and responsive to the requests made in the letter of President Coolidge in appointing this Commission. I am compelled to hold that those who opposed my views are neither specific nor are they responsive to the letter of President Coolidge appointing this Commission. The President specifically asked that your Board take steps to secure the cooperation of the large producers of petroleum. Very soon thereafter the Board of Directors of the American Petroleum Institute met and passed the following resolution, which was immediately telegraphed to President Coolidge:

(Resolution of board of directors of Institute authorizing Committee of Eleven stated here.)

This resolution was thoroughly responsive to the President's letter and is complete proof that the thought and wishes of the President were perfectly understood. It expressed a desire to take part in the intelligent discussion of the problems involved, so that the Institute could present constructive policies, and it promised the cordial cooperation of the Institute, and appointed a Committee to investigate and collect facts and report conclusions and recommendations, and the Institute promised to take action on these recommendations. The Committee that was appointed in response to this resolution produced a book of upwards of 300 pages. And now Judge Hughes comes forward as the attorney for the Board of Directors of the Institute with another verbal gusher of upwards of thirty-seven pages. In the whole voluminous mass of matter present in this book, and in Judge Hughes' statement, little or nothing can be found that is either responsive to the President's letter or responsive to the Institute Board's own pledge.

The clients of Judge Hughes are not only unresponsive to the President's letter but are unresponsive to their own pledge. This pledge is as binding on Judge Hughes as though he had uttered it himself. For him to present a voluminous statement and yet fail to discharge or even attempt to discharge the pledge voluntarily made by his clients is either the stroke of a genius or an act of plain foolishness, and I am unable to say in advance what it will prove to be. It leaves, however, no doubt of how little real thought Judge Hughes gave to this statement or else is unquestioned evidence, if further evidence is needed, that the statement made by Judge Hughes is a mere attempt to sustain a partisan position, even at the expense of obviously disregarding the rules which should govern fair argument and fair debate.

Judge Hughes Apparently Has Different Ideas Than Those Expressed in the President's Letter and Also Gives Us A Unique Definition of Conservation

THE President's letter is to me a splendid example of plain language incapable of being misunderstood unless carelessly read or wilfully misinterpreted. One of the principal wishes expressed by the President was his desire that your Board would secure the cooperation of the large producers of oil in working out practical plans for the conservation of oil. If you will read the resolution passed by the Board of Directors of the American Petroleum Institute you will find the Board voluntarily rushed forward to promise its cooperation and pledge itself to present constructive policies and to make recommendations to your Board. In spite of all this, however, it will be observed that in the entire book of nearly 300 pages issued by the Committee of Eleven, and in the thirty-seven pages issued by Judge Hughes, they not only fail to comply or attempt to comply with their promises, but there is so little attention given to the matter of **conservation** that it could all be easily re-written and put into less than a single page. What they all have said on this subject is of so little importance that it could have all been as well left unsaid and your Board would still be as well-informed as it is now. In other words, the Committee of Eleven, and Judge Hughes, have been voluminous in telling you a lot of unresponsive things and what could **not** be done. If there is any evidence in this book or in Judge Hughes' statement of an earnest and actually sincere desire to cooperate, it is not easily comprehended by even the most careful reader. Even where it purports to deal with conservation there seems to be a total lack of comprehension of what conservation really does mean and where conservation is most needed. It seems to me that what is said on conservation is more confusing and harmful than beneficial.

On page two of Judge Hughes' statement, under the subhead "Conservation," Judge Hughes says:

> "In a general sense, it may be said that the purpose of this inquiry is to direct attention to the need and methods of conserving our oil resources. No one will question the vast importance of these resources. No one, I am sure, would dispute the desirability of conserving them. There may be in the minds of some of our people a confused notion as to what a policy of conservation really imports, but I think those who have given intelligent thought to the problems of the oil industry, and to the obvious, importunate and unceasing demands of the public, are agreed that conservation of our oil resources and products means **economical use.**"

It seems to me Judge Hughes has displayed unwarranted self-confidence by assuming to tell your Commission what is the purpose of this inquiry and especially in view of the fact that a careful reading of his own statement indicates that he either does not understand the purpose of the inquiry or is endeavoring to sidetrack the issue. If he is right, I have been wrong from the start, and the "confused notion" of which he speaks, has a concrete example in the impossibility of harmonizing his statement of the purposes of this inquiry and his definition of conservation, with the statements made and the instructions given in the President's original letter appointing this Commission. The Judge seems rather proud of his definition of conservation, for the words **"economical use"** appear in italics in the copy from which I quote.

I am one of those who, in the language of Judge Hughes, have given

much thought to this problem, but if Judge Hughes is right, I can only assume that I was unable to give it the kind of "intelligent thought" he speaks of,—for I cannot subscribe to the idea as he seems to want us to believe, that **conservation** consists **only** in **"economical use."** That is certainly a very one-sided contention. My adversaries admit that in some cases we have left approximately ten barrels of oil in the ground for every one we have produced by ordinary methods of flowing and pumping. Now, no matter how **economical the use may be** of the one barrel that is produced, I am unable to believe that this compensates for the waste represented by inefficient recovery, and, again, if the conservation is one solely of "economical use," or even primarily of "economical use," then it is not the oil men your Board should depend upon primarily for efforts to conserve oil, but to the users of oil, such as the automotive engineers, the artificial gas men and the users of oil for fuel purposes. But I have already represented to your Board, and I think I have proved to your Board, that economy of use will not conserve our oil if we must continue under our present system. It would be more nearly true to say that we find the oil as fast as we can, we produce it as fast as we find it, and we burn it as fast as we produce it. Hundreds of millions of barrels of oil are already being produced in excess of our real needs for petroleum purposes, and if we were, under our present system, able to double the efficiency of every automotive engine, it would have but little or no effect on conserving our oil but would simply increase the amount of oil being burned to displace coal.

Judge Hughes' Statement, Concerning Other Phases of the Oil Problem Are Just About As Wrong As His Statement About Conservation.

IT is my opinion that Judge Hughes either gave little study and thought to the preparation of the statement he read before this Board or he was far too anxious to comply with the wishes of the particular men with whom he did confer. I could go on and give example after example where I believe he is wrong, such as the example I have given by this reference to conservation, but it seems unnecessary and would perhaps be an unjustified imposition on your time.

Judge Hughes says in his opening remarks:

> "The action of the President in constituting the Federal Oil Conservation Board has afforded a welcome opportunity for the consideration of the problems relating to the oil industry. It has assured the conduct of this important inquiry by those who, by reason of official interest and personal ability and distinction, are most competent to prosecute it. In representing the American Petroleum Institute before this Board, it gives me pleasure to assure the Board of the desire of the Institute to afford a most cordial and thorough-going cooperation in its endeavor to go to the heart of these problems."

If Judge Hughes wanted you to think that the President's action was welcomed by the business leaders of the Industry, I am compelled to take notice of his statement and deny it. The facts are so widely known, and even outside of the Industry, that if we are to be criticized for not welcoming the action of the President we only subject ourselves to further criticism every time we permit such a statement to go uncorrected because it adds to that for which we may already be criticized, the further charge of insincerity. I am also sorry to say that when Judge Hughes says that it gives him pleasure to assure the Board of the desire of the Institute to afford a most cordial and thorough-going cooperation to go to the heart of these problems, he is either indulging in a form of politeness which is wholly lacking in sincerity or he is being misled, and I think there is abundant evidence before the Judge to show him that at no time has there been thorough-going cooperation on the part of the Industry. And while I am sorry to call attention to this matter, I am convinced that the attempt to make believe that we are trying to cooperate with the President to bring about cooperation is fooling nobody but ourselves, and while we can justify opposition to any changes being forced upon us, we cannot justify a pretense of cooperation when we are not cooperating and especially in view of the fact that we are doing such a poor job of disguising what we are doing. The ostrich with his head in the sand has got nothing on us. We present a more ludicrous picture because our head is not well covered and the rear view of our body is more conspicuous.

If Judge Hughes made any study of the report of the Committee of Eleven, he must have found the resolution passed by the Board of Directors of the American Petroleum Institute reprinted on pages 34 and 35, and one of the questions I wanted to ask the Judge, had he remained after reading his statement, was, what explanation was given him why we never complied with the pledges we made in that resolution and, especially in view of the fact that we telegraphed this resolution to President Coolidge and in other ways invited the largest possible publicity to our action.

Judge Hughes is magnanimous in his assurances of cooperation and tells us as we read on:

> "In considering how that cooperation may best be given, it becomes apparent that the only assistance that would be worth while is that practical aid which lies in the effort fully to understand what the Chairman has called the 'national petroleum condition,' both in their economic and legal aspects, and to face squarely the facts thus ascertained. To deflect from this course, to wander in a maze of theories, however industriously elaborated, would promise nothing but an addition to the volume of verbal futilities which burden our government archives."

The last sentence of the above quotation strikes me as describing exactly what the Committee of Eleven and Judge Hughes have been doing in connection with this matter. It reads exactly as though Judge Hughes had anticipated the criticism that might naturally be made of his own statement and of the report of the Committee of Eleven and is striving to answer it, in advance of its utterance. I know of little "which burdens our governmental archives" or "which wander in such a maze of theories" and are more "industriously elaborated," or are more in the nature of "verbal futilities," than the report of the Committee of Eleven and Judge Hughes' defense of it. If I could borrow Judge Hughes' extensive vocabulary and his unquestioned ability to use the English language most effectively, I could perhaps better describe this book and this statement, but having neither the vocabulary nor the ability to use it effectively, I could not give as good a description of what the Committee of Eleven and Judge Hughes have done as Judge Hughes himself has done to forestall and answer the criticisms which these documents naturally invite.

The Petroleum Problem Is Of Such Importance That It Deserves To be Protected From Anything But Accurate, Definite and Concrete Statements.

IT is a great source of regret to me that I must take a position not in accord with so many business leaders of the Industry. It seems to me that my opponents have been allowed to file with your Board a great volume of matter which purports to deal with the wishes expressed by the President in his letter and which does not do so, and with all due respect to your Commission, I again refer to the fact that I have tried to be specific and definite and I feel that I am placed at a great disadvantage unless your Commission will compel everybody who speaks or contributes to this subject to be definite and concrete. I have neither the time to prepare, nor would I expect you to expend the lesser time necessary for you to read, a complete reply to the report of the Committee of Eleven or a complete reply to the statement made by Judge Hughes, except as such a statement might be deemed desirable for the information of the public. The report of the Committee of Eleven is at best mere padding in much of the matter it presents. It is carelessly prepared, it omits the most important documents in this whole matter, namely, the letter of the President appointing your Board. If this letter had been understood and constantly kept in mind, I think this whole controversy might have been greatly simplified, if not indeed avoided. The report of the Committee of Eleven is a most curious publication

and without any precedent of any kind with which it might be compared or contrasted. If any other business or scientific society ever issued such an indefensible report, I never heard of it. Much of it is nothing but idle and careless chatter which frequently contradicts itself. It assumes a knowledge on the part of the authors of the business of other people and attempts to show what the steam railroads, public utility electric companies, the ocean shipping concerns and other businesses will do for many decades in advance, and yet shows a woeful lack of knowledge of what is already going on within our own Industry by disregarding some of the most essential factors. The greatest new factor in the demand for oil since the introduction of the automobile is entirely ignored, and by this I mean the use of oil for the heating of the home. The substitution of the gasoline driven bus for the electric street car and the steam railroad, which is another factor of enormous importance, is also disregarded.

I seriously doubt whether the report of the Committee of Eleven was even written by anybody who had the responsibility of being compelled to attach his name to it. I doubt if any of the members of the Committee of Eleven have ever read it with sufficient care to really know everything that they are attempting to say, if they ever do sign their names to it. I also doubt whether the directors who voted to endorse it, had read it, at the time they so voted. For me to express doubt that the report of the Committee of Eleven has ever been read, or has ever been carefully read, by some of the interested parties, may surprise you, but most of the members of the Petroleum Industry know how, and why, the book was prepared, and they are, therefore, giving but little attention to it. On the other hand, the outside world does not know the inside facts, and in many instances the volume is being used as a text book.

So far as Judge Hughes' statement is concerned, it seems to me it is nothing more than an attempt to bolster up the position which has been assumed throughout by the report of the Committee of Eleven, and, in my opinion, your Board would have been just as far advanced had you permitted the Committee of Eleven to have restated its views as by listening to Judge Hughes. Judge Hughes may be thoroughly justified in his capacity as an attorney at law in the position he takes, but I am confident the Judge would never, in his capacity as a citizen, attempt to represent to your Board that he had made a careful study of the petroleum situation and allow you to believe that, in his opinion, it was unnecessary to take any steps to conserve oil and prevent wastes.

Every Witness Should, In My Opinion, Be Compelled To Make Definite Recommendations Regarding Conservation.

WHAT I am particularly anxious about is that someone should compel the men who are attempting to give advice on the subject to say, whether or not, conservation measures should be adopted, and if not, then why not, and if so, then what these conservation measures should be. While I hold that there is absolutely no proof that we have an adequate supply of American oil to carry us through even another war if it would come at once, nevertheless, I cannot agree with anybody who thinks conservation is unnecessary simply because he believes, even though he cannot give any tangible reason for this belief, that we have an abundance of petroleum. We are in a wholly wrong frame of mind as a nation, if we have reached that point where waste is justified unless imminent shortage threatens whether we are dealing with oil or any of our many other natural resources. The waste that characterizes our petroleum is, however, more huge, needless, and shockingly unjustified than that which attends any of our other natural resources. It also has an exclusive and individual bearing on the obligations which have been assumed by our Federal Government.

An attempt has been made by many of my opponents to have the public believe that Judge Hughes, after a careful study, is ready to assure the people of this country that we have an adequate supply of oil and that there are no wastes and no need for conservation. If Judge Hughes really thinks this is so, I hope he will courageously step forward and say so and will not object to being questioned for his reasons for thinking so. On the basic points stressed in the President's letter, I am unable to decide on some points what Judge Hughes does think. After listening to his statements at your hearing, my first reaction was that he had hopelessly confused the issue and it was not worth while to make more than a brief reply, and then to insist that everybody having any connection with this matter should go on record without qualification, so that in event of an early shortage of oil, the public would know just who the men were who made the representations that we had an adequate supply and just who the men were who had accepted these representations. On further thought, it became apparent to me that this would in no way discharge whatever duty I may have in this matter, because it would be of small moment no matter how reprehensible and neglectful the conduct of these men may be, should it develop in the near future that failure to lay the real facts before the public and to take proper action regarding the conservation of oil had resulted in an otherwise avoidable shortage.

The ability to point an accusing finger at others and to say "I told you so" will not, of course, in any degree, compensate for the disastrous results of an oil shortage, and while if no action is taken to insure against such a shortage, it is my belief that every man who has had anything to do with this matter should be forced to assume the full responsibility for action or his failure to take action, nevertheless, I do not think that we have reached the point yet where the matter of recording the position of these men is the all important thing. There are thousands of men in the Petroleum Industry who think and believe exactly as I do, but they do not feel they can afford to fly in the face of the position they believe has been taken by the prominent leaders in the Industry and many of these men, who know the most about the subject, can hardly be blamed for their unwillingness to risk encouraging the displeasure of their employers or the men whose displeasure might be disastrous to them. Before this matter is dropped or closed, provided no adequate steps are taken to do whatever may still be possible to insure a supply for the future, I propose to put everybody on record, so far as I can do so, so there will be no chance for anyone to dodge his responsibilities in the matter if serious consequences do overtake us.

I Dispute The Right Of Judge Hughes To Say That The Statement Made By Him To Your Board On May 27th Represents The Views Of The American Petroleum Institute.

IT was my desire at your hearing, on May 27th, to bring out through questions directed to Judge Hughes, in event his statement was in disagreement with my position, a number of points which I thought would be of value to your Board. As Judge Hughes had other appointments which compelled him to leave the hearing immediately after reading his statement, I was unable to develop this information, but I shall now endeavor to do so by a statement, although it is not so effective as it would have been had it been brought out by a series of questions.

Judge Hughes never attended any meeting of the Board of Directors or of the Executive Committee of the American Petroleum Institute. The Board of Directors voted to retain Judge Hughes, but it never authorized anyone to tell him what its views were, nor had the Board, as a Board, recorded its views so that the records would disclose such views as Judge Hughes presents to your Board. It is also true that the Board of Directors of the American Petroleum Institute has taken no measures to find out what the individual views are of the members of the Institute and it is likewise true that the Board of Directors is not unanimous in its views. Therefore, I wish to ask Judge Hughes how he could state the position of the American Petroleum Institute without a canvass of its membership, and how, and where, he got information to lead him to believe that the views of even the Directors were as expressed by him.

I doubt if Judge Hughes ever instigated on his own behalf a search of the records of the American Petroleum Institute. If he did make a reasonably thorough-going search of these records, I wanted to know just how he went

about it. I also wanted to know if these records did not make it quite plain that the activities of the Committee of Eleven were for the purpose of bolstering up an opinion that had already been expressed and had been made a matter of record rather than to determine the real facts. I also wanted to ask him if it were not true that the Committee of Eleven could not have made any different report than they did make without being in conflict with statements their members had made before any investigation had been made. I would also like to have him point to any parts of his statement, if he can, that is not based on information furnished by some member of the Committee of Eleven, or to any part of his statement not completely in harmony with the report of the Committee of Eleven.

It is true that technically the Board of Directors has endorsed the report of the Committee of Eleven, and, therefore, the Committee of Eleven represents the views of the Board of Directors; but the Board of Directors consists of **53** men, and the report of the Committee of Eleven was endorsed at a meeting where only **21** were present; only 15 voted to endorse the report of the Committee of Eleven, 5 voted against its endorsement, and one asked to be excused from voting, so, at the present time, it represents only an endorsement by less than one-third of the Board of Directors of the American Petroleum Institute, and many of the 15 voting for its endorsement were members of the Committee of Eleven.

By no chance, in my opinion, would a majority of the Board of Directors endorse the report of the Committee of Eleven if required to do so by a signed endorsement, giving them the full individual responsibility for all that it says, and I doubt if many of them would be willing to endorse it at all. I have also been advised that the report of the Committee of Eleven was never signed by the members of the Committee of Eleven, and I doubt very seriously whether all of the members of the Committee of Eleven would now, or in fact would ever have signed this report.

The real truth of the matter is that a small organized minority has assumed to speak, not only for the entire Board of Directors, but for the entire American Petroleum Institute and the entire Petroleum Industry as well. This minority has made the men of the Industry believe that the leaders of the Industry are unanimously in accord with the views expressed by the Committee of Eleven, which is not now true, and probably never was true, except as silence is interpreted to give consent. Belief that all the business leaders of the Industry are backing the report of the Committee of Eleven has intimidated the rank and file of the men of the Industry, and while there are hundreds who do not subscribe to these views—and their numbers are growing all the time until I should probably speak of them as thousands—nevertheless, they are yet afraid to speak their real views. Others, even though they cannot be intimidated, are loath to inject themselves into this controversy. I maintain, therefore, that Judge Hughes could not have justified to your Board, on the day he appeared before you, that he had any proper authority to say to you that the statement he made represented the American Petroleum Institute or even the views of the Board of Directors of the American Petroleum Institute. On the other hand, the Board of Directors would now naturally feel compelled to go to the extreme to endorse his statement so as to avoid denying the authority which Judge Hughes assumed but did not have.

But, if the entire Board of Directors of the Institute, the entire membership of the Institute, or the entire Industry should have endorsed this report, or should now endorse it, it would make little difference, for the report is not true, and a man like Judge Hughes, skilled in the weighing of evidence, should have been able, without great effort, to have soon learned from simply a study of this document alone that it was untrue.

There is not a single petroleum engineer, even though he may be engaged in trying to sustain the position of the Committee of Eleven, who does not know that this report is untrue. The mere mention of the report of the Committee of Eleven before any meeting of the Petroleum scientific men is always sure to provoke a "snicker" that nothing will suppress, and, no matter how many of the "bosses" may be present either.

Your Commission Has The Right To Demand Of Those Who Have Assumed To Speak Not Only For The Industry But For The Country, How Much The Country Can Depend Upon For Ground Reserves Of Petroleum.

I AM in doubt whether this Commission should be praised for its patience in permitting such voluminous testimony to be filed, which, in some instances, merely encumbers your records, without indicating a definite statement as to the amount of ground reserves of petroleum we still have, or whether this Commission should be criticized for permitting the filing of such voluminous records as are represented by the report of the Committee of Eleven and Judge Hughes' statement, and yet fails to deal more specifically with the matter in hand.

The decision of what should be done must depend upon how much our remaining reserves of oil amount to and it is idle for us to talk about the "billion acres of land" that may produce oil, for we cannot burn prairie acres of land to drive a battleship and there is no use talking about a "billion acres of land" unless it is used as evidence to enable us to estimate the amount of oil which remains. And if the oil men are unwilling to make an estimate of our remaining reserves, or if this estimate when made is not large enough to insure a future supply, then it is up to us to do something to insure a supply and to act without delay. It is mere child's trickery to attempt to force the druggist, the grocer, the butcher or our other citizens, to form an idea of our oil reserves from a mass of descriptive but indefinite word pictures, or from a statement of the magnitude of our land acreage, and especially impossbile when these word pictures and land areas are grossly misrepresented.

Your Commission has the right, and I believe it to be your duty, to force those who try to make the public believe we have an adequate supply of petroleum to be definite in their statements of the quantity we can depend upon.

The report of the Committee of Eleven states on page eight, that we have three millions, two hundred and forty-four thousand and five hundred and eighty-one (3,244,581) acres of proved and producing area of which the table on page fifty-eight gives one million, one hundred and three thousand, nine hundred and five acres (1,103,905) as the amount of proved but undeveloped acreage. I dispute the existence of this acreage and I would suggest to your Commission that you demand the maps to show you where this acreage is located. The report of the Committee of Eleven maintains that we have in excess of one billion, one hundred million (1,100,000,000) acres of land on which oil may be found. This land is described in the book published by the Committee, on pages 4, 11, 12, 13, 15, 45, 50, 51 and 59. I dispute that we have any such amount of land as is described and I would recommend that your Commission demand the submission of the maps showing the location of this land and that your experts check up and see how much land there really is which conforms to the description as given on the pages I have enumerated.

The report says on page eleven:

"The Committee on Supply stresses the fact that the greatest of the national petroleum reserves consists of the one billion, one hundred million (1,100,000,000) acres of as yet unexplored and unproven land underlaid with sedimentary rocks that await the drill."

Then on page fourteen, we are told that from coal alone we may be able to recover two trillion, ninety five billion, four hundred million (2,095,400,000,000) barrels of oil.

If the "one billion acre reserve" is the greatest reserve, then it must be in excess of two trillion barrels. This is of course grotesque. We have no land of the area and character claimed by the Committee and so far as our resources from coal are concerned, the report itself admits that if all the coal mined in 1924 had been processed for the recovery of oil, it would only have produced about 3% of the motor fuel consumed that year, and I might add that even accepting the claims made

by the Committee, it would have not produced enough to have been a substantial contribution to even our increased needs in 1925 over 1924. To assume that Judge Hughes would have been unable to have fully comprehended, simply by a study of the report itself, that it was hopelessly untrue and inaccurate, would be equivalent to saying that he lacked the intellect that should be displayed by a promising law clerk.

Foreign Oil

JUDGE HUGHES refers to foreign oil and indicates that one solution of our problem is to supplement our American reserves of petroleum with American owned reserves in foreign countries. I have previously questioned the availability of foreign reserves and I again want to say that in event of war we should not be compelled to rely on oil subjected to the risk of ocean transportation. It is unfair for me to dismiss this important feature of our oil policy with so few words, but my argument is already a long one and there is little use for me to say that which many can say. Every man who can foresee the possibilities of the flying game can tell you that foreign oil is perhaps no resource at all in case of war.

Our Present Methods Make It Impossible to Apply Scientific Knowledge and in Fact The Knowledge Which Would Be Possessed By An Unskilled Child Cannot Be Used

WE all know that Judge Hughes is a sober minded man, not given to joking, and yet, some of his statements would hardly be more amusing had he made a studied effort to provoke amusement. If I understand the references he makes to scientific methods, I would conclude that he is trying to make you believe that progress in the science of producing oil will be best insured under our present methods, and that any change from these methods for that reason is undesirable. This is so far from being true that it would be amusing if it were not so serious. Our present methods make impossible the application of scientific methods to the recovery of oil. In fact the knowledge that would be possessed by an unskilled child cannot be used.

Since this controversy started, I have demonstrated to your Government experts that oil contained in a virgin pool has a much lower viscosity and a much lower surface tension than this same oil when raised and placed in our tanks. In other words, in a virgin pool, the oil is in a much more fluid condition and it has less tendency to cling to the sands. Only by maintaining the pressure on the pool, and by preventing the escape of the gas, can the oil be maintained in this highly fluid condition and with the least tendency to adhere to the sands. Under our present methods it is impossible to prevent the dissipation of gas and we not only waste gas at the surface but fail to recover anything like as much oil as we could get. I have also pointed out to your Government scientists other conditions that must be maintained to secure a maximum recovery of oil and it is impossible to secure and maintain these conditions under our present system. Some of these matters are set forth in a letter I sent to the Chairman of your Board on July 3rd, 1925 and which is attached hereto. (Published earlier by National Petroleum News.)

Judge Hughes treats at some length regarding our production methods and while he fails to give a picture of the unscientific conditions that now prevail in a newly discovered oil field, and a better word would be the "uncivilized" conditions, nevertheless, you need do nothing more than read this portion of Judge Hughes' brief to realize that conditions are far from what they should be in connection with our production methods. Judge Hughes has attempted to make you believe that through supervision by Government agencies and the Bureau of Mines that waste and inefficiency cannot prevail in the drilling on Indian or public property. Judge Hughes is also wrong in this statement. I have no hesitancy in telling you that the waste is almost as bad on Indian and public property as it is on strictly private property, and so far as the public lands of the United States are concerned, we are compelled by law to restrict the area which can be held by any one oil operator in any single pool, and I am prepared to demonstrate, if further demonstration is at all necessary, that only by the "unit operation of pools" can waste be prevented.

I regret exceedingly that I cannot find something in Judge Hughes' brief to commend to your Commission if for no other reason than to offer some evidence that this statement of mine is not prompted by prejudice in the matter, but I can find nothing in the way of a correct statement of facts which is also a useful contribution to the work of your Commission, or anything that in the long run I think will be beneficial to the Petroleum Industry. If it was intended solely to befog and confuse the issue, I cannot even compliment it on that score, for it is so obviously partisan to the extreme and dwells so preponderantly on what cannot be done that no one would be apt to be misled into taking any part of it at what purports to be its face value.

Unjustified Opposition Can Often Succeed By Preventing General Recognition of Real Facts And Success In Efforts To Cause Delay Often Results In Defeat That Would Be Impossible As A Matter Of Merit

MAY I respectfully call your attention to the fact that it will be two years since the President appointed this Commission and it is my belief that those who criticized me and opposed my views have never made any definite statement of what the conditions are, nor what should be done about these conditions, and yet they have most effectively blocked all progress. Many new pools hve been opened up since the President created this Commission and each has contributed its share to the waste which is always bound to occur under our present methods but which is wholly unnecessary under rational methods. A new pool has been opened in the panhandle of Texas. The waste of gas alone is something appalling. It is common talk among oil men that the gas being blown to the air is in excess of 500,000,000 cubic feet per day. This is equivalent in energy value to nearly 100,000 barrels of oil per day.

If I am wrong in assuming that my opponents have dealt as a rule in mere generalities and have failed to be responsive either to the President's expressed purpose as contained in his letter appointing this Commission, and also have failed to be responsive to their own pledge which was given at the Directors' meeting held in Atlantic City on January 12th and 13th, 1925, and telegraphed to the President, and that all of this is causing unnecessary delay, then I believe this Commission is warranted not only in correcting me but in reprimanding me. When I refer to the time that has been consumed since the President issued his letter, I am not arguing that your Commission should have sooner prepared a report or that it is now high time that your Commission should issue a report. You have without question a great amount of incorrect information before you and while the Commission may have the high degree of intelligence necessary to issue a report at this time, I would, nevertheless, counsel against this plan and urge that your first efforts be directed toward the elimination of incorrect testimony so that everybody interested in this matter may the more easily draw a correct conclusion.

Your Commission also has hundreds of answers made to questionnaires before the information contained in my letter of July 3rd, 1925 to your chairman was made public, and complete and correct plans as to how our production of oil should be carried on can only be intelligently done by conforming to the facts set out for the first time in this letter.

While counselling against delay, I am also compelled to counsel against an attempt to prematurely issue a report on this matter. I seriously urge that no conclusion be announced by your Board until a conference has been held by from ten to twenty of the leading petroleum technologists of the country in connection with the Government experts to fully discuss and agree if possible upon the advantages which will be gained and the savings which will be made by changes in our present methods.

For me to indulge in hundreds of pages of argument to call attention to what is wrong in the report of the Committee of Eleven, and what at best is little more than mere idle chatter, will get us no place, but if there are men in the petroleum business who have the courage to risk their reputation for intelligence and truthfulness on the fact that the book published by the Committee of Eleven is true from cover to cover and that Judge Hughes' state-

ment is also true and a fair presentation of the matter, I will enjoy nothing better than an opportunity to sit down before your Commission, or such agents as your Commission may appoint, and be able to look these men directly in the eye and compel them to look me directly in the eye, and get down to brass tacks as to just what is true in the report of the Committee of Eleven and just what is true in the statement made by Judge Hughes.

Making And Fighting Straw Men

THERE is a great deal contained in Judge Hughes' brief in opposition or in denial of things which I have never urged and which no one else has ever urged, so far as I know. Why it is necessary for Judge Hughes to argue that the Preamble of the Constitution gives no power to the Federal Government is not known to me. Nobody in this controversy, so far as I am aware, is urging any power derived from the Preamble of the Constitution. No one, so far as I know, is representing that the "General Welfare" clause gives Congress any power in this matter, so there is no need for Judge Hughes to argue this point. I have never urged that Congress could derive power from the Commerce Clause and nobody else has done so, so far as I know, or at least not for the past two years, so Judge Hughes is either answering no one in his argument on the Commerce Clause or is at least two years behind the situation as it exists today. Nor has anybody suggested and urged, so far as I know, any one of several paternalistic plans or details of plans which are referred to by Judge Hughes, such as holding back petroleum until some authority or other decided it is needed. I would be inclined to think that Judge Hughes is, in many instances, simply setting up straw men so he can demonstrate his strength by knocking them down. But, on the other hand, of course it would be very easy for him to be entirely misinformed as to what is and is not being urged, if he took no proper means of checking up as to what the position was of the various men of the Petroleum Industry other than to consult with the Committee of Eleven and those supporting the position of the Committee of Eleven.

I Cannot Subscribe To The Theory Held By Some Lawyers That Ordinary Citizens Cannot Understand What The Laws Are Or What They Ought To Be

THIS covers all I will attempt to say at this time in reply to Judge Hughes on all matters other than the power of the Federal Government to legislate regarding the production of oil. My treatment of the subject may seem rather vigorous to some but I assure you the situation justifies it. In fact the situation justifies still greater vigor of treatment and I will welcome any reply from any source that will justify a further reply by me and one which gives no one the right to expect me to use the soft pedal. The lawyers have been particularly irritating in this controversy and have attempted at every turn to prevent anything and everything from being given serious consideration on the grounds that every proposal was illegal or unconstitutional. I have no notion that the legal profession as a whole is a brake on the wheels of progress, but many of the individual members of the profession are. Many of them interpret the law to suit their own ends and we are expected to meekly subscribe to their representations no matter how irrational they may be. The lawyer is prone to criticize other professions but resents criticism of his own profession, and yet I know of no profession that could profit more by frank criticism. If nothing more was accomplished it would compel common citizens like myself to better appreciate the profession and its members. I am conscious of the irritation produced on most lawyers for a layman to attempt to say what the law is, or what the law ought to be, and especially such lawyers who are particularly impressed with the infallibility of their own opinions. It is to them an unwarranted assumption on the part of a lay citizen to pretend to understand the statute law, or the theory of the statute law, or the Constitution, or the theory of the Constitution, and to do so is to invite a drastic reprimand on the part of some lawyer. Lawyers try to defend all law as being based on sound logic and yet they surely would not have the immodesty to maintain that no one but a lawyer can understand or use logic, and yet this is what they say by attitude if not by words when they ridicule a layman for attempting to discuss a legal matter. They are quick to resent any assumption on the part of any lay citizen to know anything about the law or the Constitution, but often treat a lay citizen as though he were a thoughtless schoolboy if he is on the witness stand and fails to show a complete knowledge of all the rules of evidence, and I doubt whether one lawyer out of a hundred could defend these rules as conforming to logic, if called upon to do so, without opportunity for extensive study. In fact, I doubt whether some of the rules of evidence have any justification based on accurate logic.

In spite of my intense admiration for the profession as a whole and my love, respect and admiration for many of the individual members of this profession, I am compelled to believe that there is no other profession in the world in which there is more four flushing and intolerance and less unanimity of opinion, or any other profession that has made less progress in the last five decades, or is making less progress, than the profession of law. Other professions seem to gradually get their problems behind them while in the legal profession new problems seem to develop more rapidly than old ones are disposed of. There is practically no new legal question that can arise that able lawyers do not disagree on.

To a layman it seems as though the police powers of the States have been extended beyond all rational boundaries and there are now no natural limits that can be set up and no telling what the States can or cannot do in trespassing upon private rights and private property. Decisions by courts are so numerous, voluminous and varied that it is possible for a Judge to twist out most any kind of a decision his fancy or prejudice may dictate and yet justify it by what has been stated in previous opinions. The courts also seem to be so ready to reform and rewrite private contracts that if any feature of any contract proves unsatisfactory to either party, the probability of getting the courts to set it or the whole contract aside seems sufficiently favorable, based on actual performances of the courts that litigation is being liberally premiumized. It is highly improbable you will even be able to dispose of your estate as you would like to do if anybody sees fit to litigate the matter. New laws are passed with almost the same rapidity as is characterized in the breeding of bacteria, and while these things are publicly deplored by many of the legal profession, the things about which we complain are perpetrated by other members of the profession, and again what a lawyer may do as a public law maker at thirty, he at fifty joins his protest with ours when something similar is done by others. Laymen are expected to vote whether they do or do not want to have a certain law or a certain amendment to the Constitution, and yet the lawyers then tell them it must be interpreted not in the language that the layman understands, but in the language which has been defined by the courts.

The lawyers and the courts have their own dictionary for words and phrases. A layman votes on a law or a constitutional amendment because he is in favor of what he thinks it means, then a lawyer comes along and says it means something entirely different and often there are about as many different opinions as there are lawyers present. After nearly one hundred and forty years of operation under our present Constitution, you can start an argument any day on what even its most important provisions really mean. The more litigation there has been on any feature, such as regarding the Commerce Clause, of which most of it has been about Interstate Commerce, the more chance there seems to be for an argument amongst lawyers. For every question the courts have decided some lawyer can see wherein the decision offers a chance for litigation on two new questions.

While I believe the Federal Government has ample power to legislate as to the production of oil, I am unable to understand how the Constitution can be stretched to justify many of the laws that have been passed by Congress and sustained by the courts. When the oil lawyers and Judge Hughes tell me Congress has no power to legislate to prevent the waste of oil which is our principal need to conduct war, I itch to be

able to force them to tell me where there is any power in the Constitution to justify some of the laws we now have, and how they can expect anybody to reply except by a grin to some of the arguments they urge in this particular case when you realize how few laws Congress would ever have passed had these arguments been observed.

I have always leaned towards an interpretation of the Constitution with special regard to the preservation of States rights, but there are in some cases natural laws which easily indicate what are the powers best exercised by the Federal Government, and these laws were well-known by the wonderful body of men who framed our Constitution. Complete and unlimited power of all matters pertaining to war is one of the powers which I think must be vested in the Federal Government and the truth of this seems to be evidenced to me by every rule of logic and every other test which I can apply. In spite of intolerance and self assurance of many lawyers, they are remarkably anxious to have their opinions in conformity with public opinion but they often try to bluff the public into thinking what they want them to think. Whether our Federal Government has complete power to provide for the common defense is something that the public has a right to have an opinion on, and I am ready to make it a matter of public agitation if the majority of lawyers side with the oil lawyers and with Judge Hughes, if I continue to feel as I do now that they merely want to squelch this movement rather than give a proper interpretation according to the Constitution. I have no wish to stretch the powers of the Constitution one iota beyond their plain and manifest meaning, but if the oil lawyers and Judge Hughes are right in this matter, then the agitation must be directed to the amendment of our Constitution, to enable the Federal Government to do that which may from time to time become necessary for our national safety.

I Do Not Know Whether The Legal Opinions Given By Judge Hughes Are His Own And Independently Reached By Him Or Whether He Has Merely Accepted The Publicly Stated Opinions Of The Oil Lawyers

I DO not know whether Judge Hughes, in telling you that the Federal Government has no power to legislate regarding the production of oil, is speaking from his own study of the matter or is simply adopting the views of the oil lawyers. He brings up no new argument that they have not brought up. It has been impossible to carry on a fair discussion with many of the oil lawyers regarding the powers of the Federal Government in this matter because they will not be bound by the rules they themselves lay down for the interpretation of the Constitution.

No lawyer has been able to show that Congress has been confined to the strictly enumerated powers and all of them are compelled to admit that the implied powers in event of war have been drawn upon practically without limit. If the power of Congress is as limited as the oil lawyers and Judge Hughes would have you believe, then in the war, through which we have just passed, every one of the three coordinated branches of our Government have seriously transgressed their Constitutional rights by passing, upholding and executing laws which were without Constitutional authority. If anybody doubts this, I urge that he apply any or all of the interpretations that he can read into what Judge Hughes says and see if he then can justify the passage of much of the war legislation that was enacted. You will fail to find any distinction of power in times of peace or in times of war which are at all important. You will fail to find any restriction regarding private property or any prohibition against the powers of Congress regulating properties within the States. In my opinion, if you are like me, you will fail to be impressed with what they say and especially as to what they say **can't be done,** when you have but recently **seen it done.**

Judge Hughes' contention that the Federal Government cannot control production within the States is a very sweeping statement which is not borne out by facts. Based on the Constitutional powers of the Federal Government to "provide for the common defense," the Federal Government asserted its right not only to "control production" of beer manufactured by private concerns within the States by specifying that it should not contain more than 2¾% alcohol but followed this by the absolute prohibition of the manufacture and sale of alcoholic drinks for beverage purposes.

Before there was any "enumerated" power in our Constitution authorizing Congress to legislate as to the manufacture and sale of alcoholic liquor, Congress did so legislate and claimed its right to do so based on the powers to provide for the common defense. A portion of the bill reads as follows: "* * * for the purpose of conserving the man power of the nation, and to increase the efficiency in the production of arms, munitions, ships, food, and clothing for the Army and Navy it shall be unlawful to sell for beverage purposes any distilled spirits," etc. Judge Hughes flatly asserts that Congress has no right to do what it has already done and in spite of the fact that it has much greater justification as to oil production.

Judge Hughes' Attitude Is Intolerant And Offensive And He Presents No Facts Or Reasons To Justify It

I AM one of probably many ordinary, or perhaps I should say common citizens, who try to understand the theory of our Government and the meaning of our Federal Constitution. It is my unqualified belief that Congress has power under the Constitutional provisions to provide for the common defense, to legislate regarding the production of oil without stretching the powers granted to it one iota. Judge Hughes dismisses this contention with language which I consider intolerant to the point of being unnecessarily offensive. He says in one place:

> "All plans for requiring unit operation or otherwise, which involve the assertion of such an authority on the part of Congress, do not require discussion. They proceed from an utterly erroneous conception of Federal power. It does not further the policy of conservation to take up the public attention with futile proposals which disregard the essential principles of our system of Government."

And again he says:

> "The Government of the United States is one of enumerated powers and is not at liberty to control the internal affairs of the States respectively, such as production within the States, through assertion by Congress of a desire either to provide for the common defense or to promote the general welfare. This is too elementary to require discussion and it is impossible to believe that the legal advisors of the Board will suggest that it proceed on any different view."

In other words, Judge Hughes specifically states that the Federal Government has not the power to do as to oil what it has already done as to other things and what the Supreme Court said Congress had the right to do.

Judge Hughes' Opinion In This Matter Is Weakened Rather Than Strengthened By The Reasons He Gives

I SUPPOSE I ought to be thoroughly frightened from restating any opinions that I have held contrary to those which Judge Hughes now announces, but I not only have not had my faith shaken in the original position I took regarding this matter, but have had it immensely strengthened by Mr. Hughes' treatment of this entire subject. If his opinion is right, it is right in spite of some of the reasons he gives rather than because of these reasons. First, Judge Hughes has attempted to sustain the truth of the representations made by the Committee of Eleven and this Committee claims we have a superabundance of petroleum. If such is the case, I agree with him that the Government has no power to legislate as to the production of petroleum. He also holds that the production of oil is strictly the "internal affairs of the States respectively." This I do not subscribe to, but of course if it is strictly the affairs of the States, it cannot be the affairs of the Federal Government. At another point in his statement, he lays great stress on what the Government can do in times of peace, as though there was one set of Constitutional powers to govern in times of peace, and another set of Constitutional powers to govern in time of war. Except in one or two

matters of minor significance, and which do not apply here, the powers of the Federal Government are exactly the same in times of war as in times of peace, and I am surprised that so many lawyers harp on the powers of the Government in times of peace and the powers of the Government in times of war. I hold that either in times of peace or in times of war, the Federal Government has complete and unlimited power to legislate for our common defense, and can do whatever is necessary in either times of peace or times of war, and it is not a question of any distinction of constitutional authority that is involved between what it can do in times of peace or in times of war, but purely a matter of what is desirable and necessary.

If Judge Hughes Is Undertaking To Sustain The Opinions Of The Oil Lawyers, It is Fortunate For Him That He Did Not Get Into This Case Sooner

IF Judge Hughes had been brought into the controversy at an earlier date he would have been expected to have earned his retainer by giving a whole series of very remarkable legal opinions. When the oil men decided they did not want to either advocate the development of pools as units, or permit others to do so, they attempted to stop the whole movement by claiming, almost universally, that it would for many reasons be illegal and could not be made legal whether done by the State or the Federal Government. They went so far as to give as some of the reasons why it could not be done that it would be in violation of United States Constitutional provisions and especially in violation of that portion of Article 1, Section 10, Clause 1, which forbids the States to "pass any law impairing the obligation of contracts," and held that the terms of leases already made would preclude any Government regulation which might conflict with private arrangements contracted for between the lessor and the lessee. What they really were attempting to sustain would be equivalent to saying that all powers of regulation given to any branch of our Government could be defeated and prevented by merely the making of a contract between individuals before such regulation became effective.

Most all the lawyers claimed to be of the opinion that anything and everything would be illegal, but hardly any two of them had the same theories or the same reasons for their theories and their opinions, and if some were right others were bound to be wrong. Somebody discovered that so far as the Federal Government was concerned, that a district judge, sitting in a criminal case against an employee of a meat packing company, and a case that was never carried to the higher courts, had taken away all the power of the Federal Government "to provide for the common defense." This case is known to lawyers as U. S. vs. Boyer 85 Fed. 432. This opinion is based on previous opinions by the Supreme Court but it seems to go further than the opinions on which it is based. The language of the opinion leads me to think the judge neither knew exactly what language was used in the other cases or how few these cases were. The defense was based on the denial that the bill passed by Congress was Constitutional and therefore the Government officers Boyer had bribed, or had attempted to bribe, were in fact not legal officials of the United States Government. The opinion of the Court, to which the oil lawyers point, was directed to the claim that the law was passed based on the power of Congress "to provide for the * * * general welfare." Of course to me it is r'diculous that any court ever took away in the slightest degree the powers of Congress to do whatever was necessary "to provide for the common defense," but if you are willing to take some of the oil lawyers literally, then Congress lost this power long ago by decisions of the Courts.

There were certainly some fantastic legal opinions and theories and reasons therefor flying around for a time besides the one furnished by the case of United States vs. Boyer. I didn't call in any lawyer at that time because, had the atmosphere been suitable for a dispassionate argument, there was plenty of material available to me for an argument by just contrasting one lawyer's reasons for his opinion with some other lawyer's reasons. The atmosphere was not favorable, however, for a dispassionate argument, and there were times when a megaphone and a bass drum would have been better equipment for a successful argument than either logic or a basic knowledge of the law.

It is my best information now that all of the important lawyers of the oil companies have backed away from any claim that the States are without power to provide by law that pools must be operated as units. Many of them still hold that the Federal Government has no power in the matter. I have very excellent reasons to believe that some of the most highly respected members of the bar, devoted to petroleum work, no longer hold that the Federal Government is without power in the matter, provided it can be shown that legislation by the Federal Government would be beneficial in increasing our war efficiency.

Your Commission has probably been astonished by the efforts that were made by the Committee of Eleven to prove that there is a super-abundance of petroleum, and you may be interested to know one of the reasons why such an effort was made to prove the existence of this super-abundance of petroleum. To any careful student it looks as though, in the effort to prove a super-abundance of petroleum, to put it mildly, "caution" was thrown to the winds. Now up to the time the President created your Commission, a majority of the oil lawyers were seemingly as "cock-sure" on all of their many reasons why the whole plan was illegal as Judge Hughes is "cock-sure" that the Federal Government has no power in the matter. After the President appointed his Commission, it was remarkable how quickly the lawyers for the oil companies commenced to lose faith in the certainty that the courts would display sufficient intelligence to hold the same views in their decisions as the oil lawyers had held in their opinions. The business leaders did not want any change in our methods. There was no need for them to do anything or to even pay any attention to the matter if the plan really was illegal, as their lawyers had assured them it was. I don't know exactly how the lawyers managed to back up before their own bosses, but I have excellent reasons to believe that the lawyers told them that it was not safe to stand on their legal rights, and I have good reasons further to believe that the best of their lawyers told them that not only did the States have complete power to legislate in the matter, but unless they could prove that there was such a super-abundance of oil and that there was no chance of a shortage of oil curtailing our war efficiency, that there was no question but that the Federal Government could do whatever seemed desirable to do, based on the powers given to it to provide for the national defense. Hence, for a matter of many months, the whole Petroleum Industry, so far as it could be commanded by many of the business leaders, was turned upside down to prove that there was so much oil that by no chance could a shortage develop and thereby jeopardize our war efficiency.

There may be some question on many points as to just what Judge Hughes really does say, but it is quite plain that he wants to make it appear that nothing can be done. That all we can do is just to stand pat.

Perhaps he does not say positively that the States do not have the power to change the methods of producing oil, so that waste will be prevented and oil conserved, but he creates the impression that it would be most difficult if not impossible. He cites a number of court decisions in his statement and quotes from some of these which in turn cite many more. All but three of the citations are on points which, so far as I know, have no bearing on the points in controversy, or have for their sole purpose the knocking down of the straw men Judge Hughes has set up. The only three cases which are cited by Judge Hughes and have a bearing on this discussion are:

Ohio Oil Co. vs. Indiana 177 U. S. 190.

Lindsley vs. Natural Carbonic Gas Co. 220 U. S. 61.

Walls vs. Midland Carbon Co. 254 U. S. 300.

I think in each of these three cases an abundance can be found, both as to what the Supreme Court says and what it sustains, to warrant us to believe the

States have power which it would be futile to oppose.

Judge Hughes attempts to make us believe that there is serious doubt whether even the States can legislate as to how oil shall be produced to avoid waste and yet he quotes and presumably approves of the decision in the case of Walls vs. Midland Carbon Co. This case would seem to prove that the States can do whatever they deem is beneficial for the public regardless of the owner's right. It would have been entirely consistent for the courts to have given an opposite decision in this case and still hold that the States have power to legislate to prevent waste and promote conservation, but to quote this case and fail to dissent from the opinion and still question the power of the States, seems to me entirely inconsistent. This case would alone furnish me with all the precedent I need to justify the right of the States to do what I advocate, but I refuse to sail under false colors or even conceal what I think. The decision in this case is to me nothing less than shocking. If this gas was not of sufficient value to others to justify reimbursing the damage done to the owners of the carbon black factory, then there was, in my opinion, no justification for this decision.

If The Report Of The Committee Of Eleven From Which Judge Hughes So Often Quoted Is True And This Report Proves An Abundance Of Petroleum, Then The Federal Government Is Without Power. But The Report Is A Mere Joke To The Well-Informed Technical Men.

IF anybody can prove there is an abundance of petroleum, then I will cease to urge that the Federal Government has power to legislate as to the production of oil. It is for your Commission to say whether my opponents by their various activities have proved the existence of such an abundance of petroleum that there is no danger of a shortage that might limit our efficiency in the prosecution of war.

The technical men, while unwilling to invite the displeasure of the business leaders of the Industry by outspoken criticism, have nevertheless, been having a lot of quiet fun out of the whole procedure and especially out of the report of the Committee of Eleven. They have coined and indulged in many jokes or have passed them down the line. They have written, helped write, or have circulated "skirts," parodies and burlesques on the report of this Committee of Eleven. One engineer, who refuses to take a public position in the controversy, said to me: "Why, Doherty, that report is the most exaggerated thing I ever saw. If these men had been called upon to make up a statement of the gold reserves of this country, they could have as well justified including all the gold contained in the sea water that will reach the three mile limit of our shores in the next fifty years."

Another engineer added, "Why the three mile limit?"

Another added, "Why the fifty year limit?"

A whole volume could be written giving statements of this general character. Had the American Petroleum Institute retained some lawyer made of more ordinary clay, some "wag" would have bubbled over and put him "next" to what was going on behind the scenes, but you can hardly imagine any of these men permitting their jocular spirits to control them when in the presence of Judge Hughes.

The Facts In The Case Are Important In Enabling One To Determine Whether The Federal Government Should Have Power In The Matter.

IN considering new legislation regarding oil and gas, it must be remembered that our present laws are not in harmony with any of our usual property laws, other perhaps than those relating to wild birds and wild animals, and that these laws came about from our lack of knowledge regarding oil and gas and are now known to be in violent conflict with natural laws, based upon our present knowledge of oil and gas. Or stated in another way, our present laws are such that the best brains of the whole world could not make it possible to carry on the production of oil and gas under these laws without being in conflict with natural laws and thereby causing huge wastes and other evils.

The reasons why I think the Federal Government has power to legislate regarding the production of oil is:

First: Because oil is our most important munition of war.

Second: It is in imminent danger of being exhausted to the point whereby we would be seriously handicapped in event of war.

Third: By changing our laws so they would conform to the general laws relating to other property, huge ground supplies of oil would naturally be built up which would be a great protection to us in event of war.

Fourth: The laws that now govern the production of oil are faulty and in violation of natural laws and make it impossible to avoid waste. By changing our present laws so they would be more in conformity with the laws governing other property, it would be possible to recover much larger quantities of oil and to conserve huge quantities of natural gas which are now wasted.

Fifth: This is the only country in the world that possesses enormous quantities of Helium Gas and it is believed by many that this gas will prove to be of vast and increasing importance as a war resource. This Helium Gas occurs always in association with natural gas, and only by changing our laws relating to the production of gas and oil can this Helium Gas in every instance be conserved.

Sixth: While in my opinion it is undesirable to do more towards the conservation of oil at this time other than to change our laws so that waste may be avoided, nevertheless, a future supply of oil from our own country is such a necessary war measure that the Federal Government should be in the most intimate touch with all matters relating to oil production and to be prepared on short notice to pass other laws aimed to still further conserve our petroleum should the necessity arise.

As I read the Constitution of the United States, all war power was given to the Federal Government and all war power was taken away from the States. The Federal Government then contracted to protect the States against invasion. If oil is, as I believe it to be, the most important munition of war, then I believe that the Federal Government would be well within its authority if it were to legislate regarding the production of oil and change the methods so that is would be possible for the owners to create, if they wished to do so, ground reserves of oil, and provided, of course, that the owners of this property were not divested in whole or in part from their property, and this I hold can be done.

I hold further that if the Federal Government was to legislate along the lines that I recommend, it not only would naturally create huge ground reserves of oil that would be available and could be drawn upon in event of war, but would also make it possible to conserve all of the natural gas, and recover a much larger quantity of oil, thus bringing a benefit to all of the property owners who had an interest in this oil and gas.

It can not be contended successfully by anyone that oil is not being wasted at a shocking rate, nor can it be contended that oil is not a most important munition of war. It is contended that we have a super-abundance of oil. I see no convincing proof of this or, in fact, any proof whatever. All the evidence points to the probability of an early shortage. Quoting from the President's letter, he says:

> "It is even probable that the supremacy of nations may be determined by the possession of available petroleum and its products."

This statement by the President is not in the least overdrawn, and yet Judge Hughes says we can do nothing to insure our war supremacy, or, in other words, we can do nothing to prevent the probability of defeat, even though we can see the reason for it and could eliminate the reason that threatens this defeat but we have no power under our Constitution to do so.

If The Federal Government Has No Power to Conserve Oil and Prevent Waste, Then Our Plan of Government Is Defective Because The Power Is Not Vested Anyplace For Us To Do That Which May Be Necessary For Our National Defense.

I HOLD that any non-offending State has the right to demand of the Federal Government that it should step in and prevent the waste of this important munition of war. I am told by Judge

Hughes and others, when I attempt to assert that there is any power whatever in the Federal Government, that I am wholly wrong, that my position is absurd and that I do not even understand the theory of our form of Government. I hold in turn that if they are right and I am wrong, I have disclosed something of vast importance to the American people, and something that interests more than merely our relatively small percentage of citizens who follow the profession of being lawyers.

According to these men, the framers of the Constitution, after taking away the war powers of the States, lacked the necessary foresight to give Congress the power to do whatever might be necessary for our national defense. While these lawyers hold that the powers of Congress are limited, I have never heard them hold that any war power rests with the State. Therefore, apparently, we as a Nation, have been riding along and the lay members of this Nation have been under the belief that the power "to provide for the National defense" vested some place, either in the States or in the Federal Government; and those of us who have tried to be students of our form of Government have always assumed that our Federal Government was clothed with complete power in the matter. But now we are told that the most important munition of war can be ruthlessly wasted and produced at a rate beyond any need for it and the excess must be burned merely to displace coal and that the Federal Government is powerless to arrest either the unnatural production and use of this oil or to prevent its waste by crude and barbaric field operations. And those of us who think otherwise are held up in a public document as being so deficient in our knowledge of our Constitution and even our form of Government as to make us an object of contempt or at best an object of pity for our ignorance.

If I deserve to be held up as an object of ridicule because I give a wrong interpretation to our Constitution, I do not think it can be denied that if my interpretation is wrong, then I have disclosed a situation which is of fundamental importance to this country, and I am very certain that the majority of the intelligent people of the country would join with me in saying that, if our Federal Government does not have complete power to do whatever is necessary in times of war or in times of peace to protect us against embarrassment if war comes, and is powerless to prevent the ruthless waste of our most essential munition of war, then we must immediately initiate an amendment to our Constitution which will leave no question of the power of the Federal Government to do this.

I have listened patiently to arguments made by the lawyers from the oil companies and Judge Hughes presents nothing new in his statement that has not been repeatedly brought up by them. I do not think there is any question but that your Commission will agree with me, if the Federal Government has not the power to do that which is necessary for our national defense, that we should immediately initiate an amendment that will give the Federal Government this power. On the other hand, after repeatedly listening to these attorneys and then going back again for a conscientious study of the Constitution, I am unable to believe that such an amendment is necessary. If it is necessary to have an amendment to our Constitution to prevent the dissipation of our oil, I think we had better validate a great deal of what we are already doing to provide for our common defense and even specifically provide for West Point and Annapolis, because if we accept literally the representations made by the oil lawyers and Judge Hughes, we then have no right under the Constitution to maintain these training schools.

These attorneys assume a great many things that at least are open for argument if, in fact, they are not obviously untrue. First, they assume that the Federal Government has no power over privately owned property situated within a State. If the Federal Government is vested with a power, it is not limited in the exercise of this power even though it must deal with private property situated within the States. These lawyers assume there is one set of Constitutional powers to govern the Federal Government in times of war and another set in times of peace, while in truth there is no important distinction, and we have just gotten through with a war in which all sorts of laws were passed that assumed to regulate and did regulate private property and commodities of practically every sort.

I will admit that I can find nothing in the Constitution that says that if petroleum should in the future be discovered and that should it prove to be a most important munition of war, and in event that State jurisdiction proves wasteful, then the Federal Government shall have the right to legislate and yet no reference in our Constitution any less direct than this would satisfy some of these lawyers. However, it is inconceivable to me that the splendid group of men who drew our Constitution and who were fully cognizant of the stern necessities of war, would have proposed such a spineless document that the most important munition of war could be ruthlessly wasted and the Federal Government would be compelled to sit idly by, unable to conserve a precious resource, which in turn, would greatly lessen the need to sacrifice human life.

These men do not claim that Congress is without power, under its war powers, to legislate over the lives of the citizens of the States. In the Constitution it is provided that Congress may take the militia of any State and send it to any other place within the United States for war purposes, and this was agreed to at a time when the militia was a vital feature in the protection of the lives of the citizens of those States, and especially as against the possibility of Indian warfare. I can not conceive that any of the members of the Constitutional Convention felt that if Congress could command and use the militia of any State then that any of the resources of any State would not be available for the common defense and it was their belief that Congress would have the right to legislate regarding all resources needed for war purposes.

To me it is inconceivable that Congress should have power to sacrifice the lives of the citizens of the States in event of war if Congress sees fit to do so, and yet Congress, according to the great oil lawyers and Judge Hughes, is unable to conserve petroleum as a war resource so as to lessen the necessity for the need to sacrifice human life. In my opinion it is essential that the Federal Government shall have the power to legislate regarding the production of oil. If it does not have this power, then it is obvious and we will all agree that it should have this power and the expense and inconvenience of passing an amendment to our Constitution is a small matter compared to the benefits that will accrue to us by doing so. If the power of Congress is as limited as Judge Hughes holds it to be, we have no power to insure our war efficiency in event of war by conserving petroleum by prevention of unnecessary waste, but must accept the risk of a shortage of oil should war come, and this means that while it is oil that the Federal Government should have power to legislate over at this time, it may be something else ten years from now and Congress will be equally powerless. So it is plain to me that if it is true that the power of Congress is limited, then we should at once give Congress the power to do in both times of peace and times of war whatever may be necessary for our National defense.

Even at this late date, and with all of the knowledge we now possess, it would be impossible to give Congress power to provide for the common defense by attempting to specifically enumerate the powers that Congress might exercise. In no way could we insure, even at this time, that Congress would have sufficient authority to provide for the common defense in the future except by either giving powers that were elastic in character or by interpreting the war powers given to Congress as necessarily being complete powers, permitting Congress to do anything necessary or desirable to provide for the common defense that might hereafter arise.

It must be remembered that petroleum was not discovered until approximately seventy years after the Constitution was adopted and there was no way to foresee at the time the Constitution was adopted that petroleum would be discovered or that it would play such an important part as a war resource. Possibly within the next ten

years some other now unknown agent may play a tremendous part as a war resource, and I hold that if it should, it immediately comes under the powers of Congress, regardless of how, where or by whom it is produced, if there arises any necessity for Congress to legislate regarding this new material. If any large percentage of the lawyers of this country support the oil lawyers and Judge Hughes in their position, then I think there are millions of citizens who will insist on removing this war handicap by the passage of a Constitutional amendment.

I will not attempt to file at this time any legal briefs in support of my position regarding the powers of the Federal Government under the Constitution. While I have no reason to alter my belief that the Federal Government has ample power in the matter, I have not the slightest doubt that if the Federal Government has not sufficient power to do whatever is necessary or even desirable to protect us in event of war, then that power should be given to the Federal Government **and at once,** even though it requires a Constitutional Amendment. I think my position that the Federal Government has this power is thoroughly warranted as a matter of prima facie evidence, and I do not think that anything has been said by my opponents as yet that is worthy of serious discussion, other perhaps than the statement made by the oil lawyers and Judge Hughes that, as the Federal Government has the power to purchase oil by agreement or to provide oil by expropriation in event an agreement cannot be reached, it cannot, therefore, be urged that it is without power to provide oil for our national defense.

Purchase Impossible If Oil Does Not Exist

THERE is but one place to store oil for war purposes, and that is in its natural ground reserves, provided we are going to make due allowance for safety and economy. With the further development of aircraft, storage of oil above ground may become a menace rather than a war protection. If it is possible to find, exhaust or destroy our remaining oil pools, the right of purchase is but an empty right regardless of our wealth if we wish to buy that which no longer exists.

Before discussing this feature of the limit on the power of the Federal Government due to its power to purchase oil by resorting to this power to expropriate if necessary, I am anxious for these lawyers to go further and show just how they would expropriate an oil pool after it had been opened by a discovery well. I think when they try to show exactly how they will proceed in a pool divided up among many owners, they will find that even expropriation is practically impossible and certainly extremely inadvisable.

But the importance of having oil for our Army and Navy is neither the sole problem nor possibly the most important problem. It is essential that our industries not only have oil without curtailment if war comes, but that their increased needs for oil produced by war conditions should be met. Those who suggest that the Government buy and store oil as against our war needs, as a solution to this problem, have given no evidence as yet that they have any real idea of what they are talking about, either as to the wisdom of the plan or the magnitude of the problem.

The lawyers who now insist that the power of the Federal Government is limited as to what it can do to provide for the common defense and claim that this is no new position on their part are, in my opinion, badly remiss in their duty to the people of this country if they have known right along that the States had power, and will continue to have power, to persist in doing that which will cripple our war efficiency and yet failed to bring this fact to public attention.

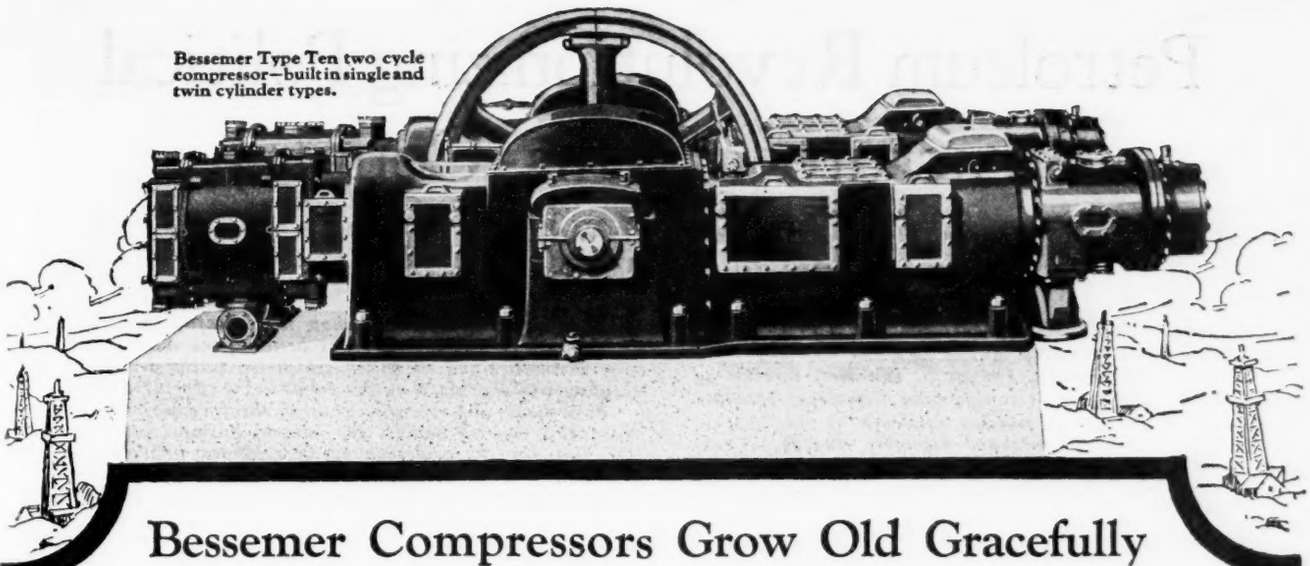
In my opinion, Congress can not only legislate regarding the production of oil but in doing so Congress will not yet be even within sight of the twilight zone of the powers given to Congress to provide for the common defense.

I am conscious of the fact that nothing short of knowing every decision of the Supreme Court on every case involving a Constitutional question, will enable one to say what the Constitution now is, but when lawyers prate about things which can not be found in the Constitution itself, it is up to them to give the decisions which warrant them in giving an interpretation to the Constitution which the Constitution itself does not give. Judge Hughes holds with the oil lawyers that Congress is more restricted in what it can do in times of peace under its war powers than a common citizen would suppose, but like the oil lawyers, he points to no decisions on which he bases his restrictions. He also dwells on the fact that private property within the States is beyond the power of Federal regulation and control, but does not tell us why, and the reason, if there be any, must be found in some court decisions, for there is nothing in the Constitution itself to justify his position that where a power is given to the Federal Government that this power is so restricted that it cannot operate within the States and as to private property.

When Judge Hughes speaks so positively on the prohibition of the Federal Government in dealing with private property situated within the States, it looks as though he is proving, at least in this specific instance, what I have suspected about his whole statement, viz., that he was doing more talking than he was thinking, and he assumed he could say whatever he wanted to say and nobody would question his statements. The Federal Government is every day exercising control over private property within the States based on different Constitutional powers.

With no wish to be humorous, I might add that if Judge Hughes was not the model citizen we all know him to be, he might have been interrupted even while writing the very paragraphs of this statement that attempt to show that private property situated within the States cannot be subjected to any form of Federal control, by a commotion in his house, and, upon investigation, he might have found it was due to a group of United States officers having broken into his cellar to find some evidence to prove that Judge Hughes was violating the Eighteenth Amendment of our Constitution. It is also well to remember that this same scene might have been enacted under laws passed by Congress forbidding the sale of liquor before there was any power given to Congress in the Constitution to regulate the sale of liquor.

Congress assumed the right, under its Constitutional powers "to provide for the common defense" to forbid the manufacture and sale of liquor and was sustained. Now Judge Hughes tells us the powers of Congress are so restricted and our form of Government is such that we cannot prevent the dissipation of our most important munition of war because this would require the Federal Government to exercise a degree of control over private property situated within the States. In spite of what is going on about him and what is common knowledge to everyone, he tells us that our form of Government is such that the Federal Government can have no control of production within the States even though it forbids the production of any beverage containing more than one-half of one per cent alcohol. He also tells us the Federal Government can exercise no control over private property situated within the States, and yet every day, he and we read about some new property that has been padlocked by the Federal officers. Until Judge Hughes has produced something more in conformity with every-day facts, he can harly expect me or anybody else to be very deeply impressed with his so-called legal opinion on this particular subject.



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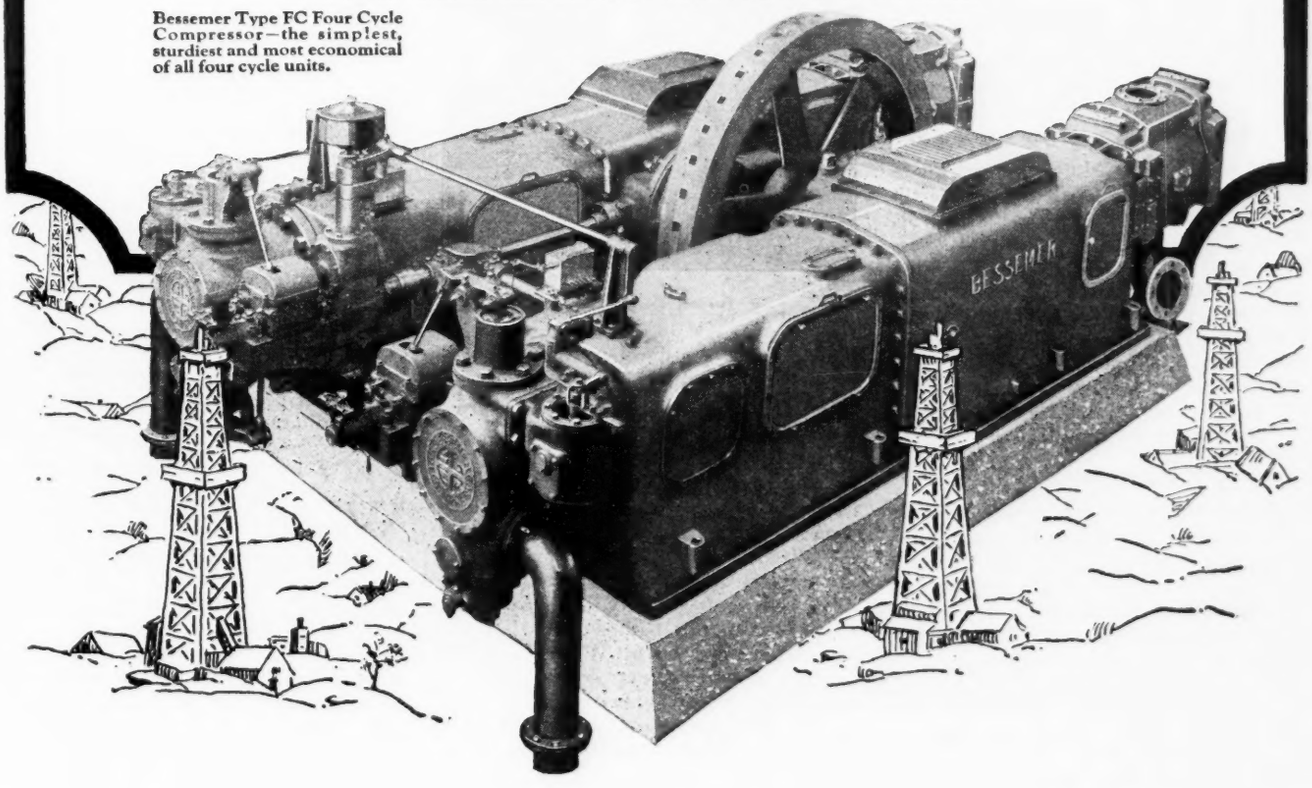

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Petroleum Revolutionizing Political Structure of this Country

By Judson C. Welliver

Director of Public Relations, American Petroleum Institute

The most important effect of this Age of Petroleum in which we are living is upon the economic and political life of the country, Judson C. Welliver, director of public relations of the American Petroleum Institute, pointed out in an address delivered at the Sulphur Springs, Texas, Chautauqua Assembly, Aug. 27. A considerable portion of his address, which has been released for newspaper publication or comment generally, is given herewith.

Welliver, a recognized student of current political and economic events, discounts what we have been accustomed to point to as the chief benefits petroleum has brought to mankind, namely industrial and social benefits, and goes on to say that the breaking down of the barrier between town and country that distance formerly imposed is changing greatly the political development of this nation.

Referring to history to show the downfall of nations through the wide differences between the agricultural communities and the cities, which led to the decadence of agriculture, Mr. Welliver points to the efforts that have been made, and recently, to array the farming interests of this country against the general business interests.

But for the widening social relations between the countryman and the town dweller and the increasing understanding of their individual problems, through personal contact the motor car has brought, what degree of success might these efforts have had, and might not this or some similar attempt have led to an irremedial break between these two great interests, he asks, and what would be the effect upon the nation.

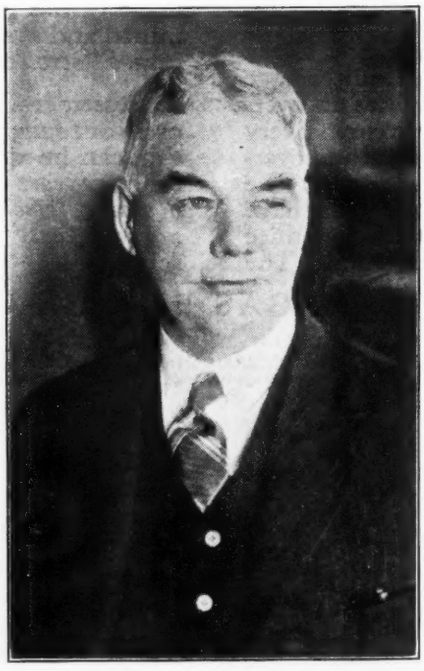
Mr. Welliver takes a point of view towards the oil industry different from most speakers or writers. Oil men generally will find some new thoughts in this address.

WITH the one exception of the art of printing, it may be doubted if any single industry has brought so many sweeping changes to the world as has the modern production and use of petroleum. None, perhaps, has wrought its revolution in manners, customs, modes of life, relations of the individual to the social establishment, in so short a period as has the industry of petroleum along with those others that are collateral to and dependent on it. If this seems too enthusiastic a statement let us examine it a moment. Earliest among the general uses of petroleum was its service as an illuminant. Do we quite realize that the most blessed privilege which modern progress has given to man, is the ability to make light where there was darkness?

The world never knew an adequate illuminant available to all the people till it found it in kerosene. That was in itself a revolution. It was not so spectacular as the later development of the internal combustion engine, which made the motor car possible; but it was probably quite as important in its influence for extension of knowledge, widening of opportunity for reading, study and education, expansion of culture, and addition to the privileges and pleasures of life.

When Light Came to Cities

NOT only that, but the whole mode of life in cities was changed when it became possible effectively to light their streets at night. The ancient and medieval cities were veritable hotbeds of crime, breeding places of revolution, headquarters of armed factions bent on robbery, murder and all violence so long as these things were possible in the darkness of night. When the light of real civilization burst upon the world it showed first from the street-corner lamp post, in warning to evil-doers that



Judson C. Welliver

the deeds of the night could no longer be done in darkness.

Read any old account of nocturnal lawlessness in the great cities, if you would be convinced how great an advance toward order and security was made possible by the proper lighting of streets. And that was brought about by the discovery of petroleum. Whether the country town with kerosene or gasoline lamps; or the city, with gas light, or the metropolis bathed in the electric radiance of the Great White Way—all depend at last on petroleum, which is essential to the manufacture of gas and to the operation of the vast mechanical plants that produce electric current.

We shall not understand the service of this still mysterious fluid unless we try to picture a world as it was before light came into it, or a world as it would be even today, if it were deprived of the lighting facilities that have so vitally changed its ways of existence. We think of our mechanical age as the period of greatest, most rapid and spectacular advance in human welfare, but this age of machinery would have been impossible but for petroleum to lubricate the wheels and gears, the flying spindles, the steam-driven Titans of power—the railroad's locomotive, the giant power plants of our ocean-going ships. With all our progress, all our technical and scientific accomplishments, we have found no substitute for petroleum as hand-maiden to the vast mechanisms of the factory age.

Or if you suspect exaggeration, go back to the cold and unemotional report of engineers and industrial authorities who have told the story of Germany in wartime. There was an empire in life-and-death struggle, its every resource under tribute; and at the last its greatest need was lubricants for its machinery, gasoline for its air navy—the products of petroleum without which it is equally impossible to wage war or to maintain the arts of peace on the scale that modern conditions have dictated.

Easy Transport for All

WE have not mentioned the most obvious and universally recognized service that petroleum has rendered, in making possible the motor car, through which life in the country has been revolutionized, quick and inexpensive transportation has been afforded to people everywhere, distance has been well-nigh eliminated as a factor in social and business relations. Our generation understands this part of petroleum's service far better than it does the other phases to which I have referred; the change

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has been brought about within our easy recollection.

We have seen the revolution in its making and in its accomplishment. We can remember, for it is only as yesterday, when limitations of transport and highways, made country life an experience of isolation and loneliness; when the privileges of church and school, of community gatherings, of intimate acquaintance and easy social intercourse, were well-nigh denied to the great rural community. We know how great is the change, for we have seen it wrought within our own day.

Revolution in Farm Life

We have seen a continent converted into a neighborhood by the multiplication of petroleum-driven vehicles and the construction of modern roads. We have seen a million tractors enlisted in the service of the farmer to plow his land and cultivate his crops, thresh his grain, and haul his produce to market. We have seen individual lighting and water pumping plants installed in ever increasing numbers on the farms, driven by the power of petroleum, to lessen the drudgery of the housewife and to multiply the comforts and enjoyments of existence for the entire family.

We have seen the rural school system broadened and bettered and lifted out of stagnation and inefficiency, thanks to the betterment of highways, the operation of public school buses, the consolidation of schools, the grading and efficient instruction of their pupils. In a word, the automobile, made possible by the utilization of petroleum, has within our time carried to the country well-nigh every advantage that had formerly been monopolized by the city.

And on the other side, the city has derived its special and peculiar advantages in this age of petroleum. While the people of the open country have been relieved of the deadly and deadening isolation which was their affliction, the people of the cities have been rescued from the congestion that was no less disastrous in its effect on the public health, the public morals, and the social well-being. The city has gone to the country; every year its multitudes more and more seek the fresh air and sunlight and comforts of the suburbs, while the wealthy minority is fast deserting the city as a place of residence, in favor of the beauties and delights of country estates. The farmer has ceased to be a "rube," the city dweller is no longer a prisoner of his limited and unnatural environment.

A Great Social Service

LET it not be omitted in this connection that this drawing together of urban and rural population into a new relationship, a more intimate acquaintance, a better understanding and a more sympathetic attitude toward one another, has implications that are as broad as our continent, as significant as the most complex social and economical problems of our times.

For in all the older societies there seems to have been drawn inevitably a sharp line of demarkation between the people of the cities and those of the open country. Their modes of life and habits of thought were as unlike as if they had lived in different ages and different continents. Their physical separation, due to the simple element of distance, became the basis of a persistent spiritual separation, an ingrowing tendency to misunderstanding, which ultimately blossomed into distrust and bore fruit in frank hostility.

In this conflict of interest and aspiration and understanding between the country and the city, the tendency with few exceptions in all social history, has been toward the concentration of wealth, of economic power and political authority in the city. The city, indeed, lived by the country; but none the less the country was ruled by the city. So culture, education, intelligence, wealth and leisure more and more concentrated themselves in the centers of population, while the rural citizenry steadily and almost inevitably descended toward the level of peasantry. The more we study the records of history the more we will be impressed that in all its generations and under all its social forms this has been almost a universal tendency.

Benefits to America

IN the early days of our country indeed, our fathers fondly imagined that our democratic institutions and our more equitable distribution of opportunity, had made this country an exception to the ancient rule. But even with us, the time came when it was apparent that no exception was guaranteed and ordained. In the last few decades before the age of petroleum had brought its privileges of easy transport and universal acquaintanceship, it had become all too apparent that the historic and too often fatal schism between city and country was more or less threatening this nation. The decadence of the nation has so many times, in history, been preceded by the decadence of agriculture, that any sign of such a division was bound to be regarded with concern. Time and again effort has been directed to array the urban and rural elements of the community in antagonism and to carry that antagonism into politics. We need not look far to see evidence of a present-day effort to accomplish this very thing; and we cannot but recognize that should it be successful, then it would be a tragic misfortune to the nation.

City and Country Drawn Together

NO single factor has contributed so much to safeguard our country against the danger of such a developing tendency to antagonism, as the easy transportation, the breaking down of the barriers of isolation, the facilitation of acquaintance and mutual understanding between city and country, that have come with the Age of Petroleum. The city has been going to the country, the country has been coming to see and know the city, as never before. It is a fundamental of human nature that two groups, as mutually interdependent as are the urban and rural populations, cannot finally succeed in disliking each other if only they get truly to know each other, to understand each other's problems, to appreciate how greatly they depend on each other. And this is exactly what these two groups have been doing, all over our country, since the Age of Petroleum, of motor cars, of good roads, opened the way for them to meet and mix and get closer to each other. Speaking broadly, I think this is the most important thing that the Age of Petroleum and the motor car has accomplished; for it concerns the fundamentals of society, the integrity of the political and economic structure.

When we find on reflection that such large significations as these are entitled to attach to this industry, we cannot fail to take a pride and satisfaction in the fact that it is so characteristically an American industry. For in all the range of activities and enterprises that have marked the astounding growth in this country, we will hardly find a phase that reflects so impressively the genius, courage, initiative and faith that typify our people.

Our Second Industry

THE production, processing and marketing of petroleum and its products is probably second only to agriculture among the nation's industries. In our export trade, only one staple, cotton, now ranks ahead of the petroleum group; and the imperial State of Texas not only leads in the production of cotton, but is third among the states in its output of petroleum.

Far be it from me to say to increase the complacency of the patriotic Texan who knows his state is quite the biggest and most important place out of doors; but candor compels the observation that if Texas, with its cotton, its oil, and its astonishing variety of other products, had not become a member of the Union, our balance in export trade over recent decades would have been more commonly unfavorable than favorable.

The truth is that if Texas were not here to make its regular and generous contribution to feeding and clothing the world, and operating its motor cars, the entire scheme of human society and industry would have to be pretty thoroughly made over in order to enable people to get on at all. There are several continents that could be better spared from the world's economic scheme than could your state of Texas; not to mention that if the justly celebrated Texas majority were to be eliminated at election time, the Democratic party would be reduced well nigh to bankruptcy without visible assets.

Turn with me a moment to consider the extent and importance of the industry in this country. More than $10,000,000,000 of capital is invested; that is, half as much as the valuation of our railroads. The pipe-line system, which gridirons the country for the exclusive purpose of transporting petroleum, ag-

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gregates something like 85,000 miles of pipe lines. Most people barely know of its existence; yet the tonnage it transports annually is actually greater than all freight moved on the railroad system of France!

Good Roads a By-Product

OR, consider the national system of improved modern highways. It is only a few years since everybody knew that America's greatest need was good roads. But how could they be provided? Where was the money to come from? In petroleum the answer was found. The good roads system is literally one of the by-products of the petroleum industry. The country is spending just about $1,000,000,000 annually for improved country roads; $20,000,000,000 in twenty years. Such astronomical figures do not mean much to us; but we can get some conception of them, from the statement that whereas it took roundly a century to build $20,000,000,000 worth of railways, we are creating improved highways so fast that it will take only twenty years to provide $20,000,000,000 worth of them! And, as I have said, this road system is literally a by-product of the petroleum industry. The gasoline tax, now collected in all but four of the states, and ranging from one to five cents per gallon, produced last year over $140,000,000. In this year 1926 it will bring into the state treasuries not far from $250,000,000. The enormous increase is due in part to the increased consumption of gasoline, and for the rest to the fact that many states have raised the rate of the tax.

A Billion in Taxes

THEN there are the state fees for automobile number plates, drivers' permits, and commercial vehicle licenses; the internal revenue taxes on motor cars, their parts and accessories, which go to the national treasury; there are production taxes on petroleum, and property taxes on motor cars and their manufactures; there are taxes on incomes derived from these industries; and in the aggregate, these taxes, which are absolutely dependent upon the oil industry, amount to just about $1,100,000,000 annually! That is, they pay the entire annual cost of good roads, and leave $100,000,000 besides.

No other industry bears a burden of taxation which, in proportion to its investment, even approaches that of the petroleum business.

In the face of all this, complaints are occasionally heard regarding the price of gasoline. But what are the fcts? Briefly, they are that the price of gasoline has advanced much less, during the era of universal price increases since the beginning of the war, than any other commodity of wide use and importance. The Department of Commerce recently published charts which give official proof of this statement. Taking 1913 as the last year of normal pre-war prices; it found that the average of prices for all commodities has advanced since 1913 about 55 per cent, while gasoline prices have advanced about 22 per cent. In a word, its place in the general commodity price structure fixes gasoline today as the cheapest of all commodities of general use.

Cheapest of All Staples

TAKE another view of this price question. Statistics of prices in many countries prove, as do the observations of travelers, that nearly all prices are lower in other countries than in the United States. The American dollar will buy more house rent, more food, more clothing, more of almost every necessary of life, practically everywhere in Europe, than it will in the United States. There is just one striking exception to this rule: the American dollar will buy more gasoline in the United States than in any European country, with the possible exception of Roumania, which has a large production and a very small consumption of gasoline.

In short, gasoline is not only very much cheaper here at home than other commodities, but it is very much cheaper here than in other gasoline-using countries. This is true because, first, of the splendid efficiency and organization of the industry in this country; and, second, because free and active competition obtains here, giving full play to the law of supply and demand.

To produce petroleum for the ever increasing demand, an almost unbelievable investment has been necessary. In the last ten years more than a quarter of a million wells have been drilled for oil, and nearly a third of these have produced absolutely none. Moreover, wells must be drilled deeper and deeper all the time. The Drake well found oil at 69 feet; nowadays wells a mile deep are not infrequent, and some have gone down a mile and a half. The average cost of all the wells drilled in California last year has been stated as $87,000; and of all wells in other oil areas, the average cost is fixed at $24,000. It has been calculated that since the Drake well was drilled in 1859 over $12,000,000,000 has been invested in developing oil fields.

An Englishman's Tribute

A FEW years ago an Englishman who had traveled widely and studied his subject, wrote a history of the world's oil industry from pre-historic times. In the introduction to his work he paid this tribute to America's part in the creation of the industry:

"This volume is an Englishman's tribute to the engineering skill and resource and bold financial enterprise of the world's most splendid race of oil men—those who have built up the American part of the industry. Today they and their country are absolutely supreme in oil."

In all the array of activities that have made our nation the richest, and in material ways the most fortunate among the races of men, the industry of petroleum is the most completely and characteristically American.

F. R. Quast on the right is Texas superintendent of gasoline plants for the Empire Gasoline Co. With him is W. J. McCune, timekeeper at the Pampa gasoline plant which has just been completed.

It's not a question of opinion, it's a matter of facts

If you get the real facts about the actual results, there is only one answer and it is: Dubbs Cracking Process — whether you want to crack gas oil, fuel oil, or crude direct

Only the Dubbs Process can crack the crude and fuel oil direct

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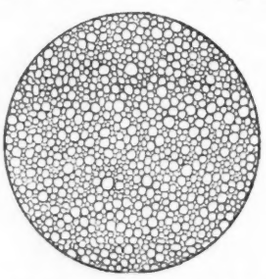

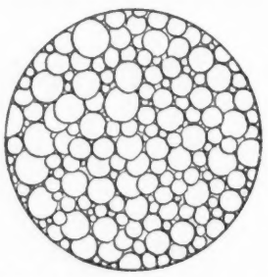

Fine froth in Campbell Absorbers embodies a vastly larger amount of oil in making up the films surrounding these bubbles than is contained in a foam made of larger bubbles. Hence greater power of absorption.

Big bubbles contain a great deal more gas in proportion to the films surrounding them than small bubbles and a much larger amount of dead area exists between them.

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S. O. of Indiana Selects New Division Town

CHICAGO.—Standard Oil Co. of Indiana has established a new division headquarters in Green Bay, Wis. The division office and station probably will not be in operation before January 1927, however, the company already has extensive storage there filled by water shipment from the Whiting refinery. The new division will embrace 25 counties, 16 in Wisconsin and nine in Michigan.

The counties in the new division are Brown, Calumet, Door, Forest, Florence, Kewanee, Lincoln, Langlade, Minitowoc, Marathon, Marinette, Oconto, Outagamie, Oneida, Portage, Shawano, Waushara, Winnebago and Waupaca in Wisconsin and Alger, Delta, Dickinson, Luce, Menominee, Marquette, Mackinac, Schoolcraft and Chippewa in Michigan. In the future Green Bay will be listed with the other division headquarters towns in the tank wagon table of prices in National Petroleum News.

The tank wagon price of gasoline is 20.6 cents and the service station price 22.6 cents and the kerosene price 16.3 cents in Green Bay. That price applies to the town of Green Bay only and not to the surrounding country. By reason of a price war in that city, actual prices are 1 cent below normal there and have been since last July 23.

Skelly Radios From Amarillo

AMARILLO.—It takes something like 16 hours to drive overland from Tulsa to Amarillo. A letter will make the trip in about two days. It is usually an overnight task to exchange telegrams between general offices and men in the field.

The Skelly Oil Company's executives, however, are able to communicate with men in the Amarillo field almost instantaneously. At Skelly's main camp in the Hutchinson County field northeast of Borger another unit has been added to the company's radio system.

A sending and receiving station has been installed by means of which it is possible to send messages either to the general offices at Tulsa or the refinery at El Dorado, Kan.

The Tulsa and El Dorado stations have been in operation for over two years. Messages are sent by code telegraph.

AFTON, IA.—Spencer & Perry, oil jobbers here, are using an old 57 Cadillac to haul 450 gallons of gasoline. No change has been made in the car with the exception of springs and G. R. Spencer, partner, states that the car is giving good service.

SYRACUSE, N. Y.—New vacuum stills of Seitz design are now being installed at the plant of Seitz Oil Products here, according to J. A. Seitz, proprietor.

Principles of High Vacuum Distillation Of Petroleum Oils

By Leo Steinschneider
Bruenn-Koenigsfelder Maschinen Fabrik, Bruenn, Inventor of Vacuum Distillation

Delivered before Institute of Petroleum Technologists, London, November, 1925

IN the year 1912, a lecture by the author before the Eighth International Congress of Applied Chemistry, at the Columbia University in New York, on the favourable results achieved in the high vacuum distillation of petroleum, met with little more than academic interest.

Working under greatly reduced pressure was at that time still wholly unknown in the petroleum industry of the United States. In Europe the first installations were already in operation. There were many opponents, and it was only slowly, step by step, that they were convinced. Meanwhile some 250 vacuum stills were put to work for the manufacture of lubricating oils from all kinds of crude oil in various parts of the world, and now nearly all the large refineries in Europe have introduced high vacuum plant, also many overseas refineries, e. g., in India, the Dutch East Indies, Venezuela, etc.

Probably no other system of distillation has won such rapid and widespread popularity. The large refineries of the United States have also adopted this process. This was done during the war, the State institutions which were at that time entrusted with the investigation of the most efficient refining methods having proved beyond doubt the great value of distillation under vacuum.

American Refiners Using It

RECENTLY, during a long tour of inspection of refineries in the United States, the author was able to ascertain that the largest oil companies in that country produce their lubricating oil distillates by the high vacuum method.

Among other plants which were seen at work in one Californian refinery alone were 74 vacuum stills, and there is scarcely any large oil company which will not now occupy itself with the question of the early introduction of high vacuum.

A paper on the principles of high vacuum distillation will therefore doubtless be of interest to many connected with the petroleum industry.

It is well known to every practical oil man that the distillation of petroleum is always accompanied by partial decomposition; this is less when the lower boiling constituents are being distilled off; it increases, all other conditions being equal, in the measure that the boiling point rises.

Provided that the plant used is good and appropriate for the purpose, this circumstance does not practically affect the result of the distillation to any great extent so long as the distillation temperature does not appreciably exceed 300°-320°C. At this temperature, however, decomposition begins to manifest itself in an increasing degree, no matter what the origin of the raw material; and every means must be employed to diminish the influence of the decomposition, in order to avoid distillation losses and to obtain good lubricating oils, a point with which I will now deal.

Residuum Is Affected

ALTHOUGH the distillates up to a boiling point of about 300°C. are not affected by the unavoidable decomposition, this does not apply to the residuum, which forms the raw material for lubricating oil distillates. In the distillation of the light products also—naphtha, kerosene and gas oil—decomposition must be avoided as far as possible if the residuum is to be further treated advantageously for the production of lubricating oils.

The objects of lubricating oil distillation are the production of distillates with good physical properties, whilst avoiding distillation and refining losses, and the manufacture of an asphalt, which is as far as feasible free from coke even at the highest melting points. The best distillation can only avoid the formation of free carbon, it cannot remove the coke already present in the raw material. The asphalt (bottoms) obtained as a residuum from the oil distillation will therefore always contain at least the percentage of coke present in the raw material from which it is won.

The aforementioned and known occurrence—that at about 320°C. greater decomposition (cracking) sets in, and this notwithstanding the nature of the distillates obtained—necessitates the lowering of the boiling point as near as possible to (and preferably below) this, in a certain sense, critical temperature. There is only one known means of attaining this object, and that is diminution of the absolute pressure, or, in other words, distillation under vacuum. This can be achieved in two ways: either by injecting steam into the liquid or by diminishing the pressure in the condensing equipment; further, by the simultaneous employment of both means, that is, by diminishing the absolute pressure in the condensing equipment and at the same time injecting steam into the liquid to be distilled.

Steam Lowers Temperature

THE purpose of the steam is, primarily, to lower the temperature by diminishing the tension of the oil vapours, and it is therefore, like the air pump, a means of reducing the pressure, although the physical procedure is different. This is demonstrated in "Die wissenschaftlichen Grundlagen der Erdoelindustrie," by Dr. Leo Gurwitsch, and from it some of the data given later are taken.

It is only secondarily that the steam is used for the purpose of bringing about an active circulation of the liquid, in order to avoid local overheating.

Two factors, however, set a certain limit to the utilisation of steam. On the one hand, too large a volume of steam adversely affects economy in working and, on the other hand, results in lowering the quality of the distillates because, due to the emergence of very large quantities of steam from the evaporating surface, considerable quantities of undistilled liquid particles are mechanically carried over into the distillates, which render the subsequent chemical treatment much more difficult and expensive and are thus the cause of large losses and impaired qualities. The percentage of particles carried over mechanically can, of course, be reduced by liquid separators, but never wholly eliminated when the same has gone beyond a certain stage. Reduction of the distillation capacity naturally affords a remedy, but this results in inadequate utilisation of the plant.

Steam Distillation Equation

ACCORDING to Gurwitsch there exists between the physical factors, in the distillation of oil with steam under the absolute pressure P, the following connection:—

$$(1)\quad p = P\frac{18}{18+a\,M}$$

In this equation

p signifies the vapour tension of the oil corresponding to the temperature T;

P the absolute pressure bearing on the surface;

M the molecular weight of the oil, which may be assumed as roundly 400;

a the quantity of steam used to one part of distilled oil;

18 the molecular weight of the water.

We will now assume that the heaviest fraction would evaporate under atmospheric pressure at 500°C., which is approximately the case with heavy cylinder oil, and that at normal atmospheric pressure an evaporation temperature of 320°C. is not to be exceeded. In accordance with the accompanying diagram the oil must then be distilled off under a partial pressure of 20 m/m mercury, the quantity of steam required for each part distillate being:—

$$(2)\ a = \frac{(P-p)\,18}{M\ p} = \frac{(760-20)}{400\ \ 20}\ 18 = 1.65$$

Therefore, in order to attain this, theoretically 1.65 parts of steam are necessary for 1 part oil distillate.

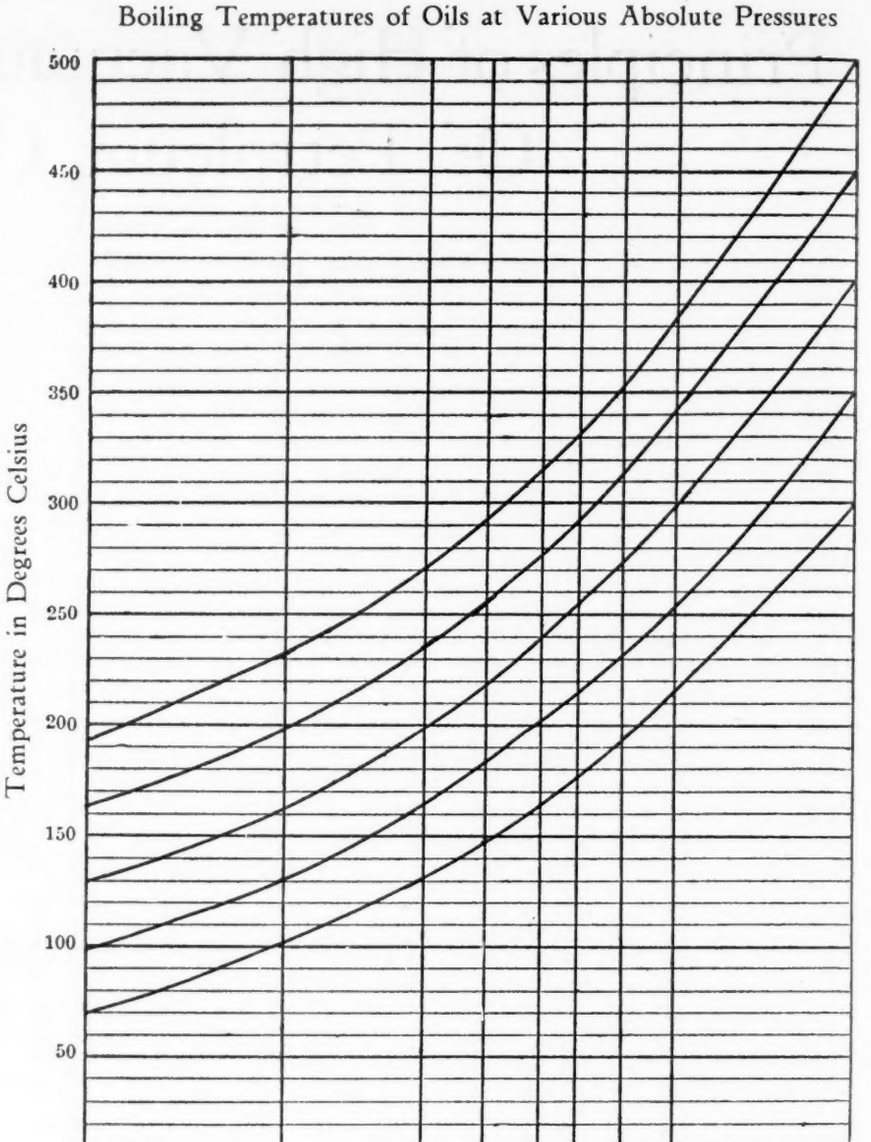
Consumption In Practice Larger

IN practice the steam consumption is, owing to the impossibility of distributing the steam with absolute uniformity in the liquid, about double the quantity calculated, consequently for 1 part distillate about 3.5 parts water, a figure which well agrees with practical tests.

Every practical man is, however, aware that it is quite impossible to work with such large quantities of steam, owing to the large quantity of undistilled particles carried over, and there is only one way of avoiding this: distillation under vacuum.

It will be seen from formula 2 that the lower P, the absolute pressure, the smaller the quantity of steam (a) which is required for distillation, and the cheaper the means by which distillation under 320°C. can be effected. Steam can be dispensed with entirely when the absolute pressure falls to 20 m/m mercury.

In Fig. 1 the absolute pressures are indicated logarithmically on the horizontal axis, the boiling points appertaining to these pressures in linear measures on the vertical axis, and this for various oils having boiling points, at atmospheric pressures, of 300°, 350°, 400°, 450° and 500°C. respectively. The logarithmic scale was chosen in order to show more distinctly, particularly at the lower pressures, the differences in temperature. This diagram clearly demonstrates how important it is to work under as low an absolute pressure as possible, as with increasing vacuum the boiling point is lowered to an extraordinary extent.



(Fig. 1) Absolute Pressure in m/m of mercury

A Practical Example

LET us now investigate what is the lowest boiling temperature which can be attained by the means hitherto known with a distillate which under atmospheric pressure would boil at 500° C.

Heating and evaporation take place in cylindrical stills at 2.6 to 3 meters (8.6 to 9.10 feet) diameter. In the case of stills which have no internal flues heat is applied on the lower part of the shell. Therefore under a liquid pressure 1.5 in oil column assuming a specific gravity of 0.8 the oil vapors are formed under a liquid pressure of 90 m/m Hg. consequently altogether 115 m/m is the absolute pressure in the vapor space.

The temperature measured in the vapour space corresponds to the vacuum meter, because the steam particles on their way to the surface of the liquid are expanded to the absolute

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pressure of the vapour space. The formation of the oil vapour, however, takes place under the increased pressure of 115 m/m and therefore at a boiling temperature corresponding to this pressure. Although the unfavourable influence of the high liquid layer is somewhat mitigated by the circumstance that evaporation occurs not only at the lowest part of the shell, but also at parts of the same at a higher level and further, also in consequence of the natural circulation of the liquid, it remains nevertheless unquestionable that a considerable portion of the vapour bubbles are formed under the full effect of the high liquid layer, therefore under conditions where decomposition is inevitable unless steam is applied.

In stills with internal flue the effective heating surface is about 800 m/m higher towards the surface of the liquid, so that the liquid pressure exerted on the vapour bubbles formed is reduced to about 0.7 M. oil column, which corresponds to a mercury column of approximately 45 m/m. The oil bubbles are therefore under a total pressure of only 70 m/m, if the absolute pressure in the vapour space is, as previously assumed, 25 m/m. An internal flued still must therefore always give more favourable results than an ordinary, externally fired, cylindrical still.

Use of Steam Necessary

IN both cases, however, as shown by the diagram, it is necessary to use steam, as in each case a reduction of the boiling point below 320°C. cannot be attained, even if it were possible to reduce the absolute pressure in the vapour space to zero.

The height of the vacuum attainable in the vapour space of the still depends, when distilling with steam, solely upon the temperature of the cooling water available for condensing purposes. This is (with 25°C. fresh cooling water and assuming 10° temperature increase to 35°C.) 45 m/m mercury. Under very favourable cooling water conditions an absolute pressure of about 20 m/m can be attained.

The inordinately growing diminution, especially in the realm of the lowest pressures, and the reduction hereby possible of the quantity of steam, and in certain circumstances its complete elimination (see formula 2) have in America led to efforts being made to reduce the absolute pressure to the fullest extent which technical means allow. Plant of this description, distilling under absolute pressures of 5—25m/m, without the application of steam, is in operation and giving satisfactory results. In such plant the oil is distilled in cylindrical stills, without internal flue, and having a diameter of about 2.9 metres and a length of about 10 M. (about 9 ft. 6 in. by 32 ft. 10 in.); the distillates, which are only treated with alkali, are also redistilled under high vacuum, and then yield without further chemical treatment marketable products possessing very good physical characteristics. The extent to which the dual distillation affects the profitableness of this method of working would have to be investigated in each individual instance. With suitable improvements in the equipment necessary for the purpose, particularly in the still imperfect dephlegmation, a considerable advance in this direction may be anticipated in the near future.

In a further paper it is hoped to deal at length with novel developments, so soon as practical results are available from plant embodying new principles. This plant is at the present time under construction.

What New Work Shows

THE new endeavours confirm the correctness of the following old principles:—

(a) Distillation under as high a vacuum as can be attained with known means, without making undue demands upon the operators of the plant.

(b) Eliminating or minimising to the utmost the use of steam.

(c) Active circulation of the liquid, in order to prevent even partial cracking when not using steam or only minimum quantities of steam.

(d) Avoidance of redistillation as far as possible; by the use of modified dephlegmating devices.

(e) Safety in operation, also when distilling the heaviest oils, without risk of the burning through of the heating surfaces.

(f) Avoidance as far as possible of subsequent chemical treatment of the distillates.

Preliminary tests with the new plant warrant the expectation of complete success.

And now a few particulars—collected during an experience of upwards of fifteen years—regarding the favourable results already obtained.

The principal value of high vacuum distillation consists in that it is precisely the inferior, heavy asphaltic oils (the conversion of which into heavy lubricating oils was unprofitable and frequently impossible), which are the most advantageous for high vacuum distillation, as all the fractions, even the heaviest cylinder oils, are won as distillate (overhead distillates) and not as residuum (bottoms). Only the asphalt—a superior coke-free material—remains in the still.

Paraffinoid oils can also be distilled with equal advantage, as the distillates won, owing to there being practically no decomposition during distillation, contain the paraffin in amorphous state. They can therefore be centrifuged without difficulty, and then yield lubricating oils having a high cold test. As far as present technical knowledge goes, the future in this domain would appear to belong to the centrifugal, but it is expressly emphasised that oils containing crystalline paraffin, as won in ordinary distilling plant, cannot be deparaffined by centrifugal apparatus.

As compared with distillation without vacuum, the advantages of high vacuum distillation may be summarised as follow:—

Economy in fuel oil consumption, about 50 per cent.

Extra yield in distilling, about 4 per cent.

Extra yield in refining, about 4—6 per cent.

Saving of sulphuric acid, 50—75 per cent.

It has been proved beyond question that in every instance all products possess better physical properties; safety in operation is greater, as, due to the vacuum, leakages cannot occur; repairs are practically never necessary.

In every instance these advantages have covered the total capital outlay in less than one year. High vacuum plant will soon not be found missing in the modern refinery.

In conclusion, the author's thanks are due to Dr. A. E. Dunstan for the willingness with which he undertook to read this paper, a kindness which has enabled me—prevented from reading it personally by pressing business affairs—to respond to the invitation with which the Institution of Petroleum Technologists has honoured me and to place my views before its members.

A. D. MILLER SONS' CO.

(Millers Oil Refining Works)

Pittsburgh, Pa.

Send your orders for celebrated

"CASTOR-OI" MOTOR OIL

A Bean Castor and Pennsylvania Oil (blend). Wears longer, slicker, smoother than ordinary oils.

Shipped in tank cars, steel drums and cans. *Take the agency in your district.*

Step Right Up, Chance of a Lifetime, Fivefold Increase in Sales!

Staff Special
CLEVELAND, Sept 4

A MEANS to increase gasoline sales 100 to 500 per cent is being offered jobbers and distributors by the Nito Co., Memphis, Tenn., manufacturer of a gasoline dope which, the maker claims, converts into driving energy the 95½ per cent of gasoline power that previously has gone to waste. In other words, absolute efficiency is obtained.

Claim is also made that 10 to 50 per cent more mileage is obtained with the doped motor fuel than with ordinary gasoline. The promoters fail to reconcile the disparity of the two claims. A recovery of 95½ per cent of previously lost energy is about 21 times as much energy as had been usefully harnessed before the advent of Nito, while the mileage claim is for only one tenth to one half more.

But, read on! The story is just beginning to unfold. This is a 100 per cent proposition and guaranteed to put $10,000 to $20,000 in your savings account in the next 12 months—or give you that sum to lay on the ponies—and also to give you control of a permanent, profitable, unlimited business. No extras for adjectives.

Whatja Get, Boys!

NOT only is it promised to make you a motorists' messiah but to help in the coronation by co-operative newspaper advertising, by supplying (¾) 100 quarts of 12½-cent oil for distribution to purchasers of five gallons of Nito gasoline on opening days, by direct mail advertising, by Nito colors. (red and gray) painted on your service station, at your own expense, by yard signs, at a price, and, not least, to supply you with coupons which are redeemable for any number of things useful from the cradle to the grave.

The Nito Co. is going after distributors or jobbers for its Nito compound which it will sell them at $4 or $5 a gallon. And also after gasoline dealers and jobbers who have to pay the Nito jobbers $7.50 a gallon for the dope, a gallon of which is used in treating 500 gallons of gasoline.

What and How, if Any

THE dope evidently is some sort of lubricating oil, claims made for it indicate that. Here is what its promoters say in their "literature":

"Nito is compounded from certain oils treated by a secret and scientific process and is the result of years of study in Europe and America and is endorsed by eminent engineers and chemists because Nito will stand still greater a degree of heat than is experienced in the combustion chamber, which is positively impossible with any other product known to us.

"Nito absolutely prevents carbon forming because it contains a newly discovered compound which causes perfect combustion of all fuel, which is a very important feature in this product which is not found in similar products and which is very necessary in these days of low gravity gasoline. Nito gives the motor pep and better pickup and removes that knock, preventing preignition which is the main cause of the carbon in most motors, therefore getting more mileage, power, and speed for the gallon of gas.

"Nito is not a dope, it is an oil compound which keeps the combustion or fire zone section of the cylinder continuously sprayed with a thin film of heat resisting oil and the carbon that is present in the cylinders will gradually loosen and dissolve through the use of Nito gasoline, after this elimination there remains only an oily surface to which carbon and residue will not stick. Nito is harmless, it does not contain ether, camphor, moth balls, lead or wax—it is a high fire test oil compound and harmless to the most delicate mechanism in the finest automobiles. Nito has the testimony of thousands to be the perfect no knock motor fuel."

At 40 He Was a Failure

THE folder containing this matter is a florid piece of promotion literature. Across the top is a red band with the implied promise to put $10,000 to $20,000 in your savings account. At the left of this promise is a sketch of a prosperous looking, contented business man putting a book into his inner coat pocket as he leaves the savings window of a bank. On the right is another sketch of the same prosperous man sitting at his desk with a small stack of letters before him and a telephone but nothing else; the clerks probably take care of the other business.

Along the right margin of the first sheet are two other sketches; one of a giddy youth shaking hands with a money bag, and the other that of a serious young man in a laboratory peering with eye straining intensity through his pince-nez into a test tube.

Pump Advertisement Copied

BUT in the lower left hand corner is the contact point for the oil men. Standing there with his hand on the hose of a Fry pump is "Courtesy Jimmie," the smiling pumpman of the Guarantee Liquid Measure Co. He is a familiar figure in the marketing division of the oil industry but even cursory examination shows that something is wrong with the picture. The Fry tag is absent from the braces around the glass receptacle. The Fry nameplate and other identifying marks have been removed from the housing pump. The name "Nito Gas" has been painted on the globe. Otherwise, no effort has been made to disguise the Fry pump or "Jimmie".

The Nito Co. says it applies 5 per cent of dealers' purchase price of Nito in any territory on newspaper advertising. The direct mail campaign is not intended to help the oil man but to gather in more distributors, the folder indicates.

Payable in Nito

THERE also is a string to the free oil on opening day's offer. The Nito Co. pays for the 100 quarts of oil the dealer is to distribute free by allowing him $1 a gallon discount on the Nito he buys at $7.50 a gallon, or 1½ cents for the amount used to treat each gallon on gasoline.

Painting of stations in Nito colors is not done by the Nito Co. but by the dealer.

Dealers also must buy the yard signs from Nito distributors at a price designated as "cost".

A ticket designated "Two-fifths coupon" is given Nito gas buyers with each two gallons purchased. These are to be redeemed by the Nito Co. at Memphis with many sorts of premiums. With 12 coupons for 60 gallons of gasoline bought at 1 cent premium, the buyer may get a wedding ring. Or for

A Check on References

A LETTER addressed to G. B. James, Weslaco, Texas, the name used as a recommendation for Nito gasoline, brought the following answer from G. M. James, Weslaco:

"I know nothing about the above mentioned gas (Nito) as I have never used it nor given any one permission to use my name in connection with the above mentioned gas."

Weslaco is a town in Hidalgo county for which the Rand-McNally large atlas has no population figures. It is reasonable to assume that the postal department found the only available G. James although the middle initials of the addressee and the recipient of the letter of inquiry differ.

The Fidelity Bank & Trust Co. of Memphis said the Nito Co. maintained a small account with it but that the bank had no credit information regarding it.

16 coupons or 80 gallons of gasoline he can get a rabbit's foot to charm away the evil spirits. With 64 coupons or 320 gallons of gasoline, he can get a 100-mile pedometer—to measure the distance back home. And while he is tramping the customer may play his own march with a horned harmonica which costs 36 coupons, or 180 gallons of gasoline.

Premiums for Cash

BUT the dealer is not assured of the entire patronage of the motorist who has a ravishing desire to get one of the premiums offered by the Nito Co. If he has 10 coupons he may send the Nito Co. 3 cents in cash for each coupon he lacks to make up the number required to get the article.

Although territory was "being closed rapidly" and a national advertising campaign would be started as soon as distributors were obtained for "a few territories open," a grand assault was made late in July to sign up distributors —the district men who pay $5 a gallon, presumably, and sell it to oil men at 50 per cent profit.

A two-page letter dated July 20 was sent out making an appeal for an introductory order of five gallons of Nito. Enclosed with the letter was a check of the Nito Co. drawn on the Fidelity Bank & Trust Co. of Memphis and made payable to the person to whom the circular was addressed.

Stand Back, Give 'Em Air

PLEASE don't riot to get on the Nito Co.'s mailing list. On the face of the check all looked well. A check for $5; pretty soft. But in the letter it was explained that the check was to be applied as part payment for five gallons of Nito at $5 a gallon. Actually it meant a special offer of Nito at $4 a gallon.

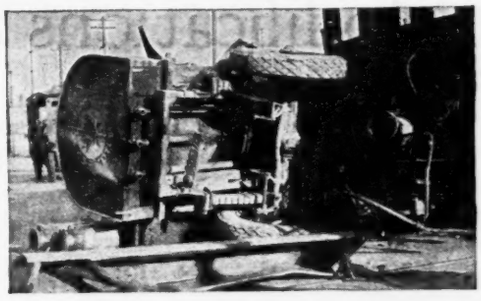
On the reverse side of the check was a typewritten line for the endorsement but under this order: "Payable only to the Order of THE NITO CO." The check is signed by "F. R. Bell, Cashier," for the Nito Co.

The high pressure "literature" of the Nito Co. is signed by "E. C. James, director sales and advertising." Three testimonials are used. They are by "H. Lipscomb Miller, chemical engineer, Tampa, Fla., G. B. James, Weslaco, Texas, and Bill Rutledge, Lake Village, Ark." Bank references are given as the Exchange Bank & Trust Co. of Memphis, and the Fidelity Bank & Trust Co., also of Memphis; also special reports by Dun and Bradstreets.

The service station dealer pays 1½ cents to treat a gallon of gasoline with the dope and sells the gallon of gasoline for 1 cent premium. If his gross margin on the gasoline is only 2 cents at the station the clipping off of ½ cent spread may mean the loss of the net profit.

Perhaps the gasoline dealer would then be in the situation of the merchant who sold clothes at a loss on each suit. He could keep in business only by selling so many. Eddie Cantor, the comedian, will help you reason that out.

The Truck Tank of tomorrow is here today!



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A photograph of the collision is reproduced above. Apparently the tank took the full blow of the tram car. The tank was put into service the next day. No time was lost waiting for a new tank or for repairs. That in itself is a big item.

But more important is the fact that the tank was capable of retaining its hazardous gasoline contents in such an extreme emergency. A ruptured tank might easily have resulted in a fire or worse yet, an explosion. In this particular instance a tram car full of people might have been injured or killed.

It is on such proofs of extraordinary performance as this that the *"Declaration of performance"* is based. Read it, not once, but several times to get the full force of what it means to you. You'll find it on page 31 of *The Truck Tank Hand Book.*

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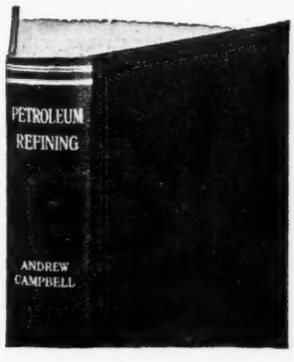

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NATIONAL PETROLEUM NEWS

801 Caxton Bldg. — Cleveland, Ohio

Rig Iron Specifications to Show Modifications and Additions

By Paul Wagner
N. P. N. Staff Writer

HOUSTON, Sept. 4

RIG iron specification No. 6, including modifications agreed upon at Colorado Springs in June and additions adopted at Los Angeles last January soon will be reissued by the division of standardization of the American Petroleum Institute at Dallas, in charge of Director Carl A. Young.

Changes in key sizes and keyway tolerances are affected; and, on recommendation from the wire rope committee, a change has been made in the wording of the paragraph relating to the groove and crown pulley, which in the revised specification will read as follows:

"The standard groove for manila cable shall be made for 2¼ inch cable. The bottom of the groove shall be an arc with a radius of 1⅜ inch. The sides of the groove shall be tangent to the ends of this arc and shall have an included angle of 30 degrees. The depth of the groove shall be 2½ inches.

The wording of the paragraphs relating to the form of groove for wire rope has been slightly changed and a formula included, says H. J. Lockhart of the Parkersburg Rig & Reel Co., national chairman of the rig iron committee, but this does not change the sense of the specifications as written in supplement No. 1 and issued in June.

Sizes of Keys Changed

AT the Colorado Springs standardization conference it was moved by E. E. Greve of the Oil Well Supply Co., and seconded by H. M. Harris of the Lacey Manufacturing Corp., that the size of the key for 4-inch and 4½ inch shafts should be changed from 1" x ⅞" to 1" x ¾" to agree with the proposed national standards of the A.S.M.E., flat type, which standards are being indorsed by the American Petroleum Institute as the basic standard for general application.

It was agreed, however, that no change should be made in the size of the key for the 6" crank shaft for the reason that two keys are used and also that the key already stipulated is a standard key but is not standard in relation to the size of the shaft.

The change affecting the two sizes previously mentioned was agreed upon subject to ratification by all manufacturers that have been licensed to use the A.P.I. monogram on rig irons.

Mr. Harris made a motion, seconded by E. Timbs of the Union Tool Co., that the tolerances on keyways on pages 5, 6 and 14 be changed to read as stipulated in supplement No. 1 to the A.P.I. rig iron standards, No. 6; also that the tolerances on keys, on page 7, table 2, be changed to agree with supplement No. 1. The purpose of this change is to avoid interference possible as previously written in the rig iron standards.

Work for the Future

NATIONAL Chairman Lockhart, in a report covering contact with other committees, says:

"The A.P.I. committee on the standardization of rigs and derricks has suggested the advisability of adopting a smaller size calf-wheel sprocket, 36 inch (in addition to the 42 inch now specified) to compensate for increasing the calf-wheel shaft diameter from 13 inch to 16 inch and 18 inch. It is suggested that the various users and manufacturers of rig irons consider this matter and advise what other sizes are in demand or have been manufactured so that the matter may be discussed at our next meeting."

Comments are also invited by Mr. Lockhart on suggestion from the California sub-committee on the standardization of rotary drilling equipment that consideration be given to the improving and strengthening of band-wheel flanges; increasing the diameter to 42 inches on bolt circles; also that there shall be provided twelve 1-inch bolts on 6-inch rig irons and that flanges be made of steel. Present bolt circle on 6-inch rig irons is 32 inches with eight 1-inch bolts.

Tolerances on Shafting

REGARDING tolerances on shafting, the following statement is made by Mr. Lockhart as national chairman of the rig iron committee: "We, at former sessions, recommended the adoption of shaft sizes with certain tolerances and at that time we were not in possession of the sizes recommended by the manufacturers of cold-finished shafting. After these sizes and tolerances were published and some of the manufacturers attempted to secure material made to the size and tolerances specified, the manufacturers of cold-finished shafting acquainted us with their sizes and tolerances and what it would mean if we departed from them. The question was so vital that they delegated a representative, Mr. Alexander Milne, to represent them at this conference and present their case.

"Their case briefly is this: they have adopted certain sizes and tolerances for which they charge a basic price and they have decided on an extra of 25 cents per 100 pounds for special sizes. In addition to this, they claim that they will be forced to charge from one dollar to five dollars per shaft extra for the close tolerances that have been designated. The close tolerances put the production of the shafts in their machine shops which would be impractical for production on large or rush orders.

"In order that the purpose of the discussion on shaft tolerances may be clearly understood, it should be stated that the tolerances desired by the manufacturers of cold-finished shafting in the rig iron shafts under discussion are as follows:

Full size: plus 0, minus .005.'

"On a 6" shaft, the sizes and tolerances in the A. P. I. Rig Iron Specification No. 6, now read as follows:

5.9954"+.000"—.0024.

The size of the hole in the mating member is 6.000"+.0024"—0". (The size of the hole in the mating member is kept the full standard size. The practice of designating the hole as standard was taken from the Tentative American Standards on Tolerances, Allowances and Gages for Metal Fits, No. B-4a, 1925, published by the A. S. M. E., and the actual tolerances stated are known as "Free fit (Class 2) Liberal Allowance—Interchangeable," on page 10 of the last named report.) This provides a maximum clearance between the shaft and mating member of .0046" and a maximum clearance of .0094". If the tolerances on the shafting recommended by the manufacturers of Cold-Finished Shafting are adopted, to maintain the same minimum clearance of .0046", (and it is the minimum clearance that defines the degree of interchangeability), it will be necessary to revise our method of expressing sizes and tolerances and make the shaft the standard full size and provide for our minimum clearances on the 6" shaft and hole in mating member which would result in changing our tolerances on the 6" shaft and hole in mating member, as follows:

Shaft .....6.0000"+.0000"—.005.
Hole in Mating
Member ..6.0046"+.0024"—.000".

"This gives us a minimum clearance of .0046" as at present, and a maximum clearance of .012" instead of .0094", as at present.

Differences About Methods

IT was brought out in the discussion that certain rig iron manufacturers forge and turn their own shafts, and they seemed to prefer the present method of defining sizes and tolerances, in line with the national standard practice, keeping the hole in the mating

member standard and taking the minimum clearance on the shaft. The manufacturers of cold-finished shafting protested against this practice, stating that the limits on the shaft were too close for ordinary run-of-mill manufacture and would necessitate the installation of special equipment.

"The point was brought out that when these tolerances were set, it was not done from the standpoint of using any particular kind of shafting, but rather from the standpoint of a national standard as applying to all sorts of shafts entering into the oil industry; that many manufacturers made other equipment besides rig irons that required the same sizes of shafting and bores as used in rig irons. It would be scarcely consistent to specify tolerances by one method on rig irons, and then possibly in the same shop specify the tolerances in a different way on the same sized shaft for other equipment.

"The argument was advanced by the manufacturers of cold-finished shafting that a variation in temperature of 60° F. would take up the entire tolerance now being permitted on a 6" shaft. However, it was overlooked that you have a corresponding variation in the mating member, the difference in the coefficient of expansion per degree Fahr. being very slight between steel and cast iron.

"The manufacturers of cold-finished shafting were apparently of the opinion that cold-finished shafting was standardized by the A. S. M. E. for the purpose of immediate use in the manufacture of equipment. Some of the equipment manufacturers present took an opposite view, that it might apply for general transmission purposes, but not for machinery manufacture. The equipment manufacturers' point of view was further substantiated by the fact that the A. S. M. E. recognized the situation in their report on 'Tolerances, Allowances and Gages for Metal Fits,' above referred to, by making the minimum clearance on the shaft and maintaining the hole at nominal size.

"Discussion at other meetings also brought out the fact that approximately 40 per cent of the rig iron manufacturers purchase cold-finished shafting, the other manufacturers forging and turning their own shafting.

Question Involves Departure

"SUMMING up the entire matter, the question is this; shall the rig iron committee depart from the present national standards of specifying sizes and tolerances (Sponsored by the American Engineering Standards Committee, making the hole in the mating member the nominal size, and specifying the minimum clearance on the shaft) for the purpose of permitting the manufacturers of cold-finished shafting to furnish cold-finished shafting from stock or standard mill run? Or, shall we follow the present system, which will be basic throughout the industry, and such manufacturers of cold-finished shafting as desire to furnish cold-finished shafting for rig irons will necessarily have to put in the necessary equipment to comply with the tolerances specified, similar to the practice already followed by some of the rig iron manufacturers.

"The following resolution was passed at the joint session of the rotary drilling committee and the rig iron committee:

> "'It was moved by Mr. Greve, seconded by Mr. Faulkner, that the report on shafting as outlined in the Rig Iron and Rotary Drilling reports remain as stated, save a few slight changes in tolerances, and that tolerances will be specified as soon as these details can be carried out. Carried.'

"The tolerances will therefore stand as stipulated in the present A. P. I. Rig Iron Specification until the next meeting of the committee."

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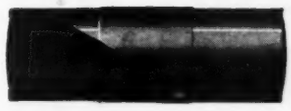
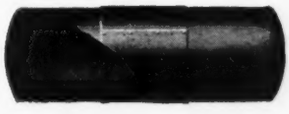


All Welded Type



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BARTLESVILLE.—C. O. Rison, production superintendent for the Indian Territory Illuminating Oil Co., will return Monday from a combined business trip and vacation spent in Montana. The Delmar Oil Co., subsidiary of the I. T. I. O. Co., has one well drilling and two producing in the Lake Basin field 30 miles west of Billings, Mont.

PENTACRE, W. VA.—During the past few weeks it has been so dry in this section, according to reports, that several natural gasoline plants have been compelled to shut down because of lack of water. Recent rains, however, have helped and it is expected that there will be no more trouble from lack of water.

?
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Roxana Buys Big Outlet In Indiana

CHICAGO, Sept. 4.—A deal was closed this week whereby Roxana Petroleum Corp., St. Louis, acquired control of the Interstate Petroleum Products Co. of Huntington, Ind., one of the biggest jobbing firms in the state. The company has distribution in more than 100 Indiana towns, and was selling roughly 10 million gallons of gasoline and 200,000 gallons of lubricating oil yearly. The Interstate had been handling Shell gasoline for some time.

The firm is headed by Milton Motter who also is president of the Marion State Bank, Marion, Ind. The vice president is James F. Bippus, owner of La Fontaine Hotel, Huntington, Ind., and his son, George J. Bippus is secretary. The active head of the business is James Martin, who carries the title of treasurer and manager. He is the son of F. M. Martin, an extensive stockholder.

Until recently Interstate Petroleum Products Co., has not operated extensively under that name; but, as a holding company, the firm organized a number of small companies in different towns and each operated under an individual name. In many cases when these small companies were organized the prospective customers became stockholders and gallonage has increased rapidly in the five or six years since expansion started. There are now said to be 13 bulk and 23 filling stations, and all were recently brought under one name, marketing "Red Top" products.

A.O.M.A. Convention Plans

CHICAGO, Sept. 1.—James A. Gilmore, sitting in the capacity of secretary of the American Oil Men's Association, 624 South Michigan Ave., Chicago, stated he had sold one third of the space available for equipment exhibits at the fall convention of his association, which will take place Nov. 16, 17 and 18 at the Congress Hotel.

No successor has yet been named for Mr. Gilmore as secretary of the Michigan Independent Oil Men's Association and he sits two or three days a week in that capacity in Grand Rapids. In the meantime he is assisted here by Miss Ann Barth, who assisted H. G. James with the work of the organization during his first and second year as executive secretary. She rejoined the organization this week.

Marland Adds to Office Building

PONCA CITY.—Two new wings are being added to the six-story general offices of the Marland companies here, to house the growing personnel. The additions will more than double the present floor space of the building.

At present lack of space is forcing some of the departments to use offices in other buildings in the city. All departments will be under the one roof by early fall. The office building is on the south edge of the city at the site of the company's 25,000 barrel complete refinery.

Many Experiments Fail to Increase Yield From Lima, Ohio, Territory

By Lawrence E. Smith
N. P. N. Staff Writer

HERE is the story of the passing out of the picture of a great field—the Lima field of northwestern Ohio, at one time producing over 20,000,000 barrels of oil a year.

Many stories have been written of this and more recent fields as they came in, bringing with them visions of the rainbow to operators and landowners alike. It is not often, however, that a story for oil men has been written on the passing of a field from the production columns.

The accompanying article has not been published as a matter of sentiment; but in the hopes study of the methods applied by operators in the Lima field to increase production and lengthen the life of this field will prove of value to operators in other fields which before many years will be facing this final period of declining production, where the question as to keeping the wells producing or abandoning them is forever present.

COMPRESSED air, chemical treatment, drilling for deeper pay, close study and cooperative methods to reduce operating costs—all have been tried out, or practiced to some extent in the Lima field of northwestern Ohio, to increase production and lengthen the life of this once great producing territory.

It would be cheering news to operators there if it could be said that some engineer had brought forth the answer to their problem. If it comes, however, it will probably be something that is at present unknown or at least pretty much in an experimental stage.

Where the use of artificial means to stimulate recovery has failed in this territory, it does not mean that these methods would fail elsewhere. Underground conditions are different here than in many pools and these artificial means, when they are tried out, were still in a very elementary experimental stage.

Abandonment of wells now proceeds at a brisk pace and the rate of drilling is now far below that of plugging old wells. From time to time a small local flurry results in the completion of more than an average number of wells in a month, but the trend, both in daily production and number of producing wells in operation, is consistently downward.

There are in the Trenton rock field of Ohio, the Lima field, somewhere between 14,500 wells estimated by principal operators and the 17,940 reported by the U. S. Bureau of Mines as the number in operation at the close of 1925. The writer's opinion is that the government report probably includes a large number of gas wells.

The daily well average for the field is around one-third of a barrel.

The Trenton field of Ohio is merely following the course of the related Trenton field of Indiana. Once this district numbered its wells by the thousands—now a scant thousand comprises the producers in northeastern Indiana and the life remaining to these is not long. Indiana, on the whole, was more troubled by water than was the Ohio part of the field and well abandonment was brisk when it got under way in earnest.

The course of the Ohio part of the field is indicated by the fact that 1200 producing wells have been abandoned the past year and a half. The total for 1926 probably will be 500 or more for the Ohio Oil Co. alone, which is the major operator in the district. This same company drilled 43 wells the first six months of this year, showing how far apart is the number of wells completed and wells plugged as no longer profitable to operate. The same company drilled 86 wells in all 1925 and at this time has only eight strings of tools at work, some of these to drill wells to augment the gas supply for lease operating purposes.

No Pleasant Task

NOW, it is not a pleasant task to abandon 500 wells in a year. When the Ohio Oil Co. executives, from time to time, are faced with the necessity of pulling out and plugging several or sometimes all the wells on a lease, they approach the task of making the selections with much reluctance. Each of these wells represents a considerable expenditure and, while all those which are abandoned have returned their investment—sometimes several times over—around the bottom of each well there is still a considerable quantity of oil. To get down there a new well would cost considerably more than did the old one. It then becomes a question of deciding to go on away and leave that oil there forevermore, or until some genius finds a way better than the drilling of wells to get it out. The amount that could be produced from a new well at the location of the one that is being abandoned would be too small to consider, just as the return from fixing up the old one would be so small as to delay indefinitely the return of the money.

It is probably true today that the money being spent in keeping the field alive could be more profitably invested in securities yielding 5 or 6 per cent.

There are two principal reasons for keeping the field alive when there is little hope that the daily production will ever be bettered. One reason is the ever-present hope of a better market, which would increase the margin of profit. The other reason is that here is a large community, so to speak, scattered over several counties, maintaining their homes, raising their families and contributing something to the progress of the world. It is not mere sentiment, but sound sense, viewing it in the large way, to avoid displacing this population as long as possible, and to do it gradually when it is done.

Where to Draw the Line

WELLS marked for abandonment, by whatever operator, have usually just about reached the stage where they will not return a profit at any price, for those being abandoned now are the ones on which repair work is hardly possible and the present equipment is in such shape that operation for much longer time is impossible.

Mack Colt, one of the pioneer operators of the Trenton rock, or Lima field, says that as long as his wells make as much as one-eighth of a barrel of oil a day and not enough water to trouble, he will keep them going and even spend a little money to repair them. Some of his wells are in areas where water was never a problem and they can be operated by pumping every second day or at even longer intervals. Some of the wells he operates now, if located in parts of the field where salt water compels steady pumping, would be abandoned.

The writer finds from discussion with several Lima district operators that income and expense, if all the usual accounting factors are taken into consideration, are just about in a state of balance

now, with the oil market at $2.48 for this grade.

There are two principal reasons why the future of the Lima district is so much gloomier than that of many another Eastern field that has been producing for an even greater time. One is the mechanical condition of the wells and the greater expense required to maintain them than in districts where the water troubles are neglible. The other reason, far greater in weight, is that the field does not offer possibilities for increasing production or life of the field by applying compressed air or other restorative methods. At least such possibilities are limited and require much further study than has been spent on this field to date.

Produces from Limestone

THE Lima field produces from the Trenton limestone and that part of the lime which contains the oil is dolomitic—magnesian—and the porosity is determined by the degree of substitution. This is, specifically, the controlling factor of the oil accumulation, the general control being the large anticlinal feature known as the Cincinnati Arch.

The writer recently saw a sub-surface map which has been worked out by the geological department of one of the companies which operate in the territory. This showed in a comprehensive way for the district as a whole what has been known to operators of various parts of the field, the local "highs" on the Cincinnati Arch play small part in the accumulation of oil except as the factor of porosity is also favorable.

There are places in the field where the degree of substitution in the lime is so great as to produce soft "cheesy" spots having all the effect, when hit with the tools in drilling, of caverns in the limestone. Indeed, many drillers contend that actual caverns, crevices, do exist. At any rate, such soft spots or crevices frequently are full of oil and good wells are provided, yielding a prolific production for a time, but not being characterized by long life.

Such wells probably have no underground communication with other wells. Mr. Colt, previously quoted, tells of having completely exhausted one of his wells some years ago of both oil and water by operating under partial vacuum. It was "sucked" dry and never again yielded any oil.

Question Use of Compressed Air

IT is apparent, from consideration of the foregoing condition, that the Marietta process, or compressed air method of stimulating production, is subject to such limitations in this field that most careful study must be made before an air plant is installed. Many operators contend it is useless to attempt to better the production of Lima district properties by the air method; others, equally well informed on the field assert that there are areas where the air method might benefit.

Such areas are hardly known today. The condition which would warrant installation of compressor equipment would be the knowledge of area in the lime with good thickness of pay and continuity of the "sand" to ensure that the pressure would affect several wells. It would be no use to put air into a well, if that were the only well that drew from that part of the pay—if it were, in effect, a one-well pool. Never is it known in this field how many wells derive their production from the the same reservoir. So, the installation of an air plant would be sheerest guesswork.

One way of getting information on the extent and continuity of "sand" bodies in the Trenton lime would be by core drilling. Now, to diamond drill a lease would call for great expense, considering that it would always be a shot in the dark. The best plan, some operators believe, would be to put down regular wells in areas that have been characterized by good wells and sustained production, coring the pay with one of the two or three forms of core barrels now available for use with cable tools. The wells would fit in nicely in the installation of the air process—they could be so spaced. Furthermore, even if air were not applied, following such investigation, the wells could be produced naturally and in time would pay out, which is all-important.

Cooperative Effort Needed

SUCH investigation is, of course, a job for a strong operator who has money to tie up for several years in drilling wells that will require a long while to pay out. An alternative would be cooperative effort by a number of operators.

The foregoing is based merely upon conversation with operators as to possibilities for bettering the condition of the Lima field. It is not known that anything definite is being considered by any operators. The idea has possibilities, though, and is worth consideration of all who are substantially interested in the field.

Operators generally consider that the Marietta process was condemned for the Lima territory when Smith & Dunn, more than 10 years ago, experimented at five different places in Indiana and Ohio and abandoned all. The first installation, near Geneva, Ind., resulted in abnormal increase in the production of one well several locations away, nearer wells being passed by. Some result was noticed at other places, but the outcome of any installation was so uncertain and the increase accompanied by so large a gain in the water that it was considered a losing venture. The process was thereby marked down as of no value in the estimation of Trenton lime operators so far as their own field was concerned.

Recently I. L. Dunn, of the Dunn-Lewis Oil Recovery Corp., who, with his brother installed the five plants in the Lima-Indiana district, said he now believes their early fruitless experiments could be improved upon and that, in the light of what is now known of how to apply the method, it would be worth while studying the field for areas where further experimenting would be justified.

Mining Not Applicable

OBVIOUSLY, water flooding, as at Bradford, is out of the question in the Lima field—there is too much water and of the wrong kind there now. Mining, as by the Ranney Process, would be even a greater uncertainty than compressed air. The latter method appears to be the only method of field rejuvenation now known that might be applicable to certain areas.

The finding of a pay deeper than the Trenton is a possibility, but not an attractive one. Some oil has been found in two or three wells drilled to the St. Peter horizon in the general Lima territory, but not in paying quantity.

For the rest, consideration of future life of the Lima oil territory becomes, for the operator, a study to improve his present methods chiefly by reducing expenses wherever possible without sacrificing production.

As in any old field, expectation of a better market impels operation of many Lima wells that have not yielded a profit for several years. So long as a lease is not actually showing a net loss month after month, it will be continued in activity. Consequently, the majority of the hundreds of wells that are being abandoned year after year belong to the class that requires vital repairs and cannot be repaired.

In the heyday of this field light casing was used. The practice was to case with 6¼-inch to some good point quite a distance above the top of the Trenton and many wells were completed with 500 to 600 feet of open hole. Below the bottom of the casing and above the Trenton is a brown shale, or "red rock," the drillers call it. In time, the casing corroded through, letting fresh water wash over the face of the shale bed. Through the course of many years, enough of this shale washed off, trickled down, to set and plug off much of the pay. Successive pulling jobs found the bottom of the hole a little shallower each time, as the anchor went back, not to its old position, but to top of the shale washings in the bottom of the hole.

The Hole Fills Up

In consequence, hundreds of wells in the district in time were pumping from a level far above the old bottom

The Lima Pool in a Nutshell

Includes Allan, Auglaize, Hancock, Sandusky and Wood counties, northwestern corner of Ohio.

Production from Trenton limestone, around 1300 feet.

Drilling started in spring of 1885.

In 1889 and 1896 the Lima field yielded one-third of the total production of the country, 1896 production being 20,575,138 barrels.

1925 production was 1,940,000 barrels, average of .3 barrels per well per day.

of the hole. As the rock pressure declined, the amount of fluid which would come into the hole was reduced by the filling up of the hole. Adding to the difficulty, many of the wells were originally repaired after the 6¼-inch casing was gone by running in a string of 4-inch, sometimes cementing it and sometimes running the sand pumpings back of it. Wells so cased, when the 4-inch goes, scarcely can be repaired, as it is frequently impossible to pull the smaller string, even though the operator is willing to pull the 6¼-inch and reset it so a thorough water shut-off will be effected.

Many a time, however, the light 6¼ string cannot be pulled without leaving part of it in the hole, in which case the well is one of those to be plugged.

As probably 70 per cent of all the wells in the district have a string of 4-inch in them, it is seen that this casing practice may force abandonment of many wells that could be saved if this pipe could only be pulled out and replaced when it is no longer shutting off the fresh water from above.

Pulling jobs are frequently on the average, Lima territory well, particularly as there is a peculiar "gooey" substance which rides on top of the oil and has to be lifted by the pump. This is a scum, something of the nature of B. S. In it are particles of the shale and sand which has caved into the hole. Cups are rapidly cut out by this stuff.

Theory of the B. S.

ONE theory of the formation of this B. S. is that it is due to the action of the water and the sulphur contained in the oil, on either the shale cavings or the limestone itself. Some support of this is found in the fact that, if a well is thoroughly cleaned out, the plug of shale cavings drilled out and removed, the frequency of pulling jobs is greatly reduced.

Whether it is worth while to clean out a well depends upon a number of factors, such as the condition of the casing, amount of oil and water being lifted. It costs $15 to $18 in this district to pull a well. When a well is cleaned out, the pulling is greatly reduced and it may be shown in many instances a real saving is effected. The criterion always is the worth of the well otherwise as a producer. A campaign of indiscriminate cleaning out would probably result in a loss.

The course of the field will be one of selection of wells, abandoning the poorest progressively when they cannot be made to pay expenses. Many of those so abandoned would not make money at any market, for the time is at hand when they must either be repaired or pulled out and the cost of repairing either is prohibitive or the job physically impossible.

One of the chief troubles of the field now is inadequate gas supply. Originally the field was blessed with lots of gas, but it has been exhausted and central powers now are shut down for one to two and three days because there is not enough gas to run the engine.

There is no better illustration anywhere of the evil times that come upon a field because of early profligacy with its gas supply than the Lima field. Now we see the operators jealously hoarding every ounce of gas, where formerly they burned flambeaux anywhere they thought they needed a light and it was otherwise wastefully employed, as well as blown off into the air. Gas engines are connected direct to gas lines to avoid the wastage that might occur around a gasometer. Long ago the hot tube method of ignition was abandoned on the engines and practically all the engines in the field today are equipped with Wico ignition systems. Operators cannot afford even to burn the small amount of gas required to keep the hot tube above ignition temperature.

Gas Comes in Waves

THERE is a peculiarity in this gas supply of the district that has not been explained as yet. The gas appears to come in irregular waves. There may not be enough to start an engine for a day or more, then it will appear in quantity sufficient to operate.

Pumpers say that a change in the wind direction affects the gas supply. If there is any reason for this seeming phenomenon other than the fact that the gas engines themselves pull a slight vacuum on the gas lines, thereby perhaps drawing the slight supply away from each other, the reason probably is far more profound than any operator can now explain.

In the Oil Springs field of Canada, operators contend that the production in what they call the "top show" varies with the phases of the moon. They say that the moon influences the water which controls the oil, driving waves or banks of oil into the wells on the crest of the water as it rises on the structure. L. G. Huntley, in Technical Paper 51, Bureau of Mines, assigns a less spectacular reason for the variation in this production. He said that this shallow stratum, an open one in the Corniferous limestone, was flooded with fresh water from swamps on the surface when the casing corroded. After spring rains or any large freshet more water seeps into the porous formation causing a rise in the water level which carries before it a considerable body of oil.

Probably there is no similar reason for the seeming peculiar behavior of the gas production in the Lima field, for it does not extend also to the oil production. Coincidences may have been noted at some time between shift in direction of the wind and appearance or disappearance of the gas supply and it passed into tradition that the former was the reason. If there be a play of natural causes that occasions the variation in the supply of gas, it is up to some more profound student of cosmic forces than either the writer or the pumper to explain.

Double up Forces

ONE method of reducing expenses in the district that has been generally employed is the "doubling up" on operating forces wherever possible. In areas not affected so greatly by water as is the majority of the field—probably 90 per cent of the fluid lifted for the entire district is water—wells are pumped at longer intervals than are others where the water is so great as to necessitate constant operation. These wells will "make up" their production and one man can care for a large number. Reduction in man power has been accomplished in every way possible all over the field.

Operators generally are not much interested in the various forms of chemical treatments, electrical treatments, and so on used with varying success elsewhere, for no particular success has been had with them in the Lima field. One operator tells of putting a large quantity of sulphuric acid into a well and thereby increasing its production from a barrel to more than 100 barrels a day, with corresponding increase in water production.

Subsequent experiments along the same line brought no result at all. It is probable that the first well treated was in better condition than the next ones and that the acid worked directly on the lime, opening new channels of flow, while the next wells, pretty well plugged by shale cavings, were not touched in the vital place. The same operator believes that any such application should be preceded by a thorough cleaning-out of the well, but the expedient is of such doubtful merit and is so expensive that there is no disposition to try it.

Certain trade-mark chemical preparations have been tried. These are usually sold under the claim that they break down paraffin deposits on the face of the sand. The Lima field has neither paraffin nor sand, hence it was no particular surprise when these cures gave in some cases an increase in production so temporary as not to pay for treating the well and in other cases gave no help at all.

From time to time small pools will be opened on the fringe of the older territory producing from the Trenton lime and occasional wells in the field itself will be impressive. In the main, however, it is a dying field and operators hesitate more and more about drilling remaining locations in proved territory. New wells in such places cannot be judged upon their initial, for they are usually at the average of the field at the end of about two years, from which point they do little more than pay operating expenses.

PENNSBORO, W. VA.—The opening of the northwestern turnpike here will provide a direct route across West Virginia. It is estimated that 10,000 cars will pass daily over this road when completed, according to C. H. Taylor, manager of the Penn Oil Co.. The opening of the turnpike was celebrated at the Pennsboro fairgrounds on Sept. 1.

Oil companies, Mr. Taylor states, will be on the job to handle the gasoline business.

Western N.P.M.A. Members to Have Special Train to Atlantic City

Staff Special

CHICAGO, Sept. 4

NATIONAL PETROLEUM MARKETERS ASSOCIATION has about overcome the idea in the minds of its western members that the East is too far away for a convention. Although it is almost two months until its annual convention at Atlantic City, Oct. 26, 27 and 28, enough interest has been manifested to justify the Pennsylvania railroad to announce a special train for oil men from Chicago and the west to Atlantic City.

According to announcements at association headquarters, this train will be unsurpassed in service and comfort. It will operate as a section of the Pennsylvania's famous Broadway Limited. It will leave the Union Station, Chicago, at 1 P.M. Oct. 25 and arrive at Atlantic City at 10 A.M. next day. Passengers at stations along the way will be taken on.

Although the Broadway Limited is an extra fare train, the oil men's special will not be. In fact its passengers will pay for their round trip one and one-half fares on the certificate plan. N.P.M.A. headquarters recently worked out a table of round-trip fares (certificate plan) from 30 cities. The fares are published with this article.

How Independent oil men may successfully combat price policies of the big integrated companies, is one of the problems President L. V. Nicholas promises to have discussed thoroughly at the annual meeting. It is planned also to have two or three nationally known speakers and to devote the larger part of the sessions to open forum discussions of marketers' problems.

Expect Record Crowd

ASSOCIATION officials expect a record attendance. Eastern N.P.M.A. members, whose presence is assured, are numerous enough to make a good showing of faces not generally seen at N.P.M.A. meetings. This feature alone makes the meeting especially attractive to exhibitors of equipment.

Western and southern states are expected to be well represented by oil men, to whom the Atlantic City trip will be more of a pleasure trip than previous N.P.M.A. meetings. In addition to Atlantic City as an attraction, Philadelphia is only one hour away with its Sesqui-Centennial exposition.

For the benefit of those western oil men who want to spend some time at the exposition, to visit New York or Washington, or to make any of the many possible side trips from Atlantic City, tickets with certificates are being placed on sale two or three days earlier than usual. In fact at far western points it will be possible to buy tickets as early as Oct. 16 and still get the benefit of the reduced rates of the certificate plan.

Fares for Round Trip to Atlantic City

(Certificate Plan)

Atlanta, Ga.	$44.90
Austin, Tex.	95.06
Boston, Mass.	19.79
Buffalo, N. Y.	25.56
Chicago, Ill.	47.28
Cleveland, O.	29.06
Columbus, O.	32.28
Denver, Colo.	103.20
Des Moines, Ia.	66.62
Detroit, Mich.	37.94
Fargo, N. D.	81.74
Indianapolis, Ind.	42.03
Jacksonville, Fla.	53.06
Kansas City, Mo.	70.38
Los Angeles, Cal.	162.89
Memphis, Tenn.	60.80
Milwaukee, Wis.	51.87
Nashville, Tenn.	50.36
New Orleans, La.	70.74
New York, N. Y.	7.40
Omaha, Neb.	74.93
Pittsburgh, Pa.	21.96
Portland, Ore.	163.10
Richmond, Va.	16.74
St. Louis, Mo.	56.32
St. Paul, Minn.	68.69
Salt Lake City, Utah	129.89
San Francisco, Cal.	162.89
Seattle, Wash.	163.10
Sioux Falls, S. D.	76.01

Atlantic City Popular

ALL the convention activities will be on Steel Pier, extending from the Boardwalk over the ocean. Six inland cities invited N.P.M.A. to meet in them for the 1926 convention, but in consideration of the growing eastern membership, Atlantic City was chosen by the association's members who voted on the seven cities.

Although Hotel Traymore has been chosen as the association's official quarters, no business will be carried on there. It will house the officers, directors and attaches of the organization but there are 50 other good hotels on the Boardwalk to select from. And convenient places to eat vary from a one-arm restaurant to dining rooms where waiters speak only French (when on duty).

N.P.M.A. recently provided its prospective exhibitors with a lay-out of Steel Pier exhibit hall which will have 107 booths, varying in price from $250 to $300. More than half of the booths have been engaged. The equipment exhibit will be about twice as large as any ever held at the Congress Hotel, Chicago.

Arrangement is such at Steel Pier that no one can reach the assembly hall where business sessions will be held without passing through the exhibit hall. The assembly hall can seat 1000 persons. Acoustics are said to be good.

The Season is Right

ALTHOUGH the great host of summer vacationers will have vanished from Atlantic City by October, the place will not be deserted by any means. Normally surf bathing is still possible in October. The association is making no effort to promote entertainment because there will be entertainment enough at hand.

According to Raymond Shaw, the association's director of publicity, every exhibit will have some novel educational display, and the hall will not be solely an array of things to sell. The Association of Natural Gasoline Manufacturers has retained two large booths and will carry out a program in the interest of natural gasoline to show its anti-knock properties.

One of the pump manufacturers, it is said, will show its first and its latest pump for gasoline distribution. Another exhibitor, according to present plans, will actually construct his product at the exhibit hall.

Two Oil Men Form Jobbing Company

HUNTINGTON, IND., Sept. 4.—Sol Bronsteen, who owns two service stations at Huntington, Ind., and Clyde F. Parker, who has spent the past 11 years with the Hawkeye Oil Co., Waterloo, Ia. and the Mason City Oil & Grease Co., Mason City, Ia., have filed incorporation papers for an oil jobbing company which will be operated as the Wana Oil Co., with headquarters at Huntington.

One 20,000 gallon and two 15,000 gallon storage tanks are now being installed, giving the new company 50,000 gallons capacity with which to start off.

MEMPHIS, TENN.—The Kendall Oil Co. of Tennessee has just been organized here with capital stock of $100,000. A bulk plant has been completed here, and five drive-in service stations have been leased or are building.

The company will also wholesale petroleum products and will handle Marland products exclusively.

F. P. Kendall is president.

YORKSHIRE, N. Y.—B. M. Peckham has just completed the installation of three 20,000 gallon storage tanks at Arcade, N. Y., on a siding of the A. & A. railroad. Mr. Peckham has disposed of his storage facilities at Arcade to Denison & Dickey of Arcade.

"The Old Order Changeth" to MARATHON

MARATHON PRODUCTS
"BEST IN THE LONG RUN"

Back in the nineties the farmers' supply of gasoline and "coal oil" was carried home in a tin can corked with a potato. In those days there was little to choose from; it depended upon what brand the corner grocer carried.

Today he is better informed and uses **MARATHON** Gasoline and **MARATHON** Kerosene in large quantities.

MARATHON Gasoline will pass the doctor and corrosion tests in every state; **MARATHON** Kerosene is sweet, meets the doctor test and is free burning.

The jobber who is selling **MARATHON** products will find the farmers' patronage profitable.

Warehouses at convenient shipping points

TRANSCONTINENTAL OIL CO.

Producers, Refiners, and Marketers of Marathon Quality Products

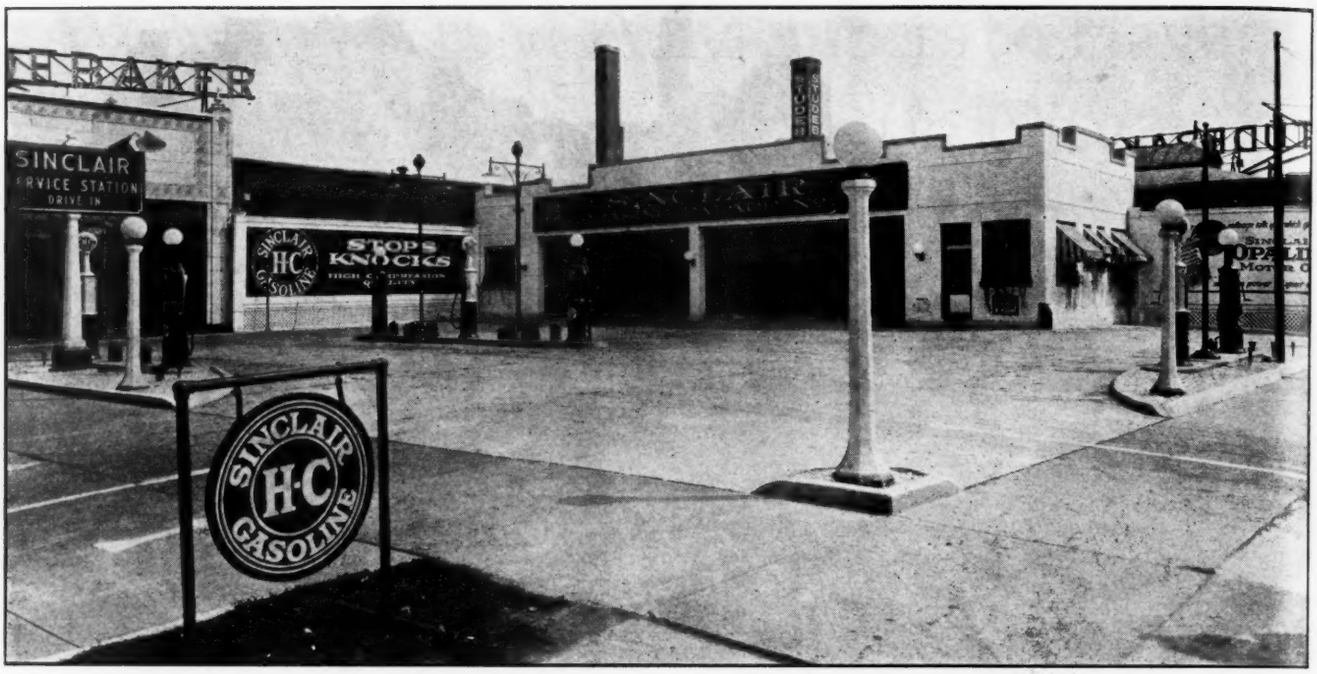
GENERAL OFFICES *Ritz Building* TULSA, OKLA.

Sales Offices:

Atlanta, Chicago, Des Moines, Fort Worth, Muskogee, Bristow, Pittsburgh, Sioux City, Tulsa

Refineries:

Boynton, Bristow, Fort Worth



Sinclair Greasing Palace No. 3, on the West Side in Chicago. This is a grease-pit de luxe. It is safe, clean and pretty as well as comfortable and convenient in any weather. Flood lights are invisible but make the pavement light as day.

Sinclair Opens 'Greasing Palaces' in Chicago

By Ward K. Halbert
N. P. N. Staff Writer

CHICAGO, Sept. 4

SINCLAIR REFINING CO. has gone in for motor lubrication service in Chicago on a big scale.

Within a few months the company will have seven elaborate greasing establishments open to the public. Three are operating now. They are called "Greasing Palaces."

Sinclair officials carefully selected the sites, so distributed through the city that they can serve all parts conveniently. A few Independent oil jobbers in smaller towns have built elaborate lubrication establishments. But stations of this kind have been unknown in Chicago until Sinclair built them, and they are creating about as much comment and attention as did the spectacular array of Sinclair service stations in Chicago eight or 10 years ago.

At several of its choice service station sites, Sinclair had enough room to build big greasing houses without buying more ground. It is a matter of pride with the real estate division of Sinclair Refining Co. that this foresight was used in purchasing filling stations locations 10 years ago. Aside from the fact that Chicago real estate has proven a profitable investment, developments in the industry in subsequent years made more space necessary for profitable operations.

No Super Stations

A. H. SUS, head of the company's marketing operations here, says this latest move to improve lubrication service is not a calculated step toward building in Chicago super service stations of the California type, but he suspects that the motor service communities of Pacific coast origin ultimately may be required in this part of the country. He says he believes regular oil companies will not be quick to begin selling other things than petroleum products. To help responsible persons or companies get space and buildings for tire stores, auto laundries and battery shops adjacent to service stations is as far, Mr. Sus thinks, as an oil company can go into the side lines.

Built of White Tile

WHITE tile, Sinclair's standard station building material, is used in constructing the greasing palaces. The station at 945 Sheridan Rd. is one of the exceptions to the white tile standard. It is built of red brick. In conformity with the service station, Greasing Palace No. 2, built on that lot, is of red brick also but there will be no more like it. However, in all of its other appointments No. 2 is a peer of the six others.

Greasing Palace No. 1 at 47th St. and Michigan Ave. is one of the handsomest. It is built alongside one of Sinclair's oldest Chicago stations, erected in the umbrella style in the center of a large lot at the intersection of the city's best south side streets. Last week the west side greasing palace was opened. It is No. 3

The accompanying picture shows the lay-out of six pits. The owner of the car may go into the basement to watch the greasing operation, if he likes, in perfect comfort and safety from grease spatters.

"One of the best ways to satisfy a customer that his car is being greased thoroughly and well, is the assurance that he may watch the work done if he likes," Mr. Sus points out. And a customer might add—"One of the best places to have a car greased right is where the workmen know the owner is likely to be standing by any time, or all the time."

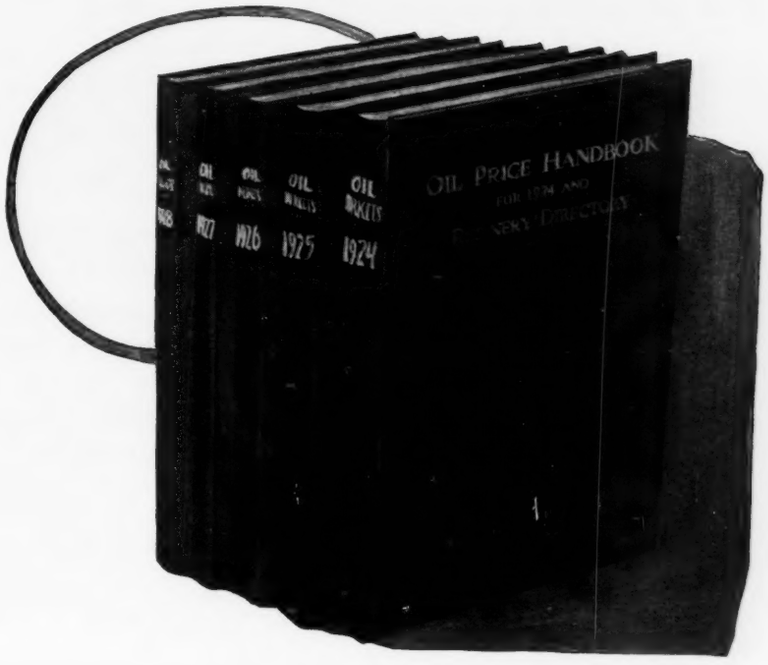
Greasing Palace No. 3 is built of reinforced concrete and steel, one story above the ground and one below—the basement being accessible by two steel stairways in the rear. Customers' cars are driven over the pits in two steel channel-irons supported by I-beams. The whole basement is open. Negro greasers stand on concrete blocks 2½ feet higher than the basement floor. The blocks, or tables, enable them to work in an erect position in easy reach of the working parts of the automobile. The block covers all the space directly below where the cars stand and is kept covered with clean sand.

Greasing Business Separate

FILLING stations and greasing palaces are separate institutions according to the Sinclair organization plan. At No. 3, however, at Kilpatrick St., on W. Washington Blvd., the two are built in one. However there are two offices. The compartment of the building at the right of the greasing pits is the filling station office. That is the headquarters

Special Offer

OIL PRICE HANDBOOK for 1924-1925



WE have started compiling the market prices and statistics for the year 1926 to be published in one volume as heretofore.

In order to make room for the 1926 edition, we offer the remaining 1924 and 1925 OIL PRICE HANDBOOKS—both volumes complete—at the special price of $6. The 1924 edition formerly was $3.75, and the 1925 edition was $5.00, or a total of $8.75.

Just think of the saving to you of time and money if you can put your finger instantly on the very price you want—refinery, tank wagon and s.s., crude prices, export markets, and other valuable statistics on refinery, crude, natural gasoline stocks and production.

The OIL PRICE HANDBOOK issued by National Petroleum News at the end of each year, is the most complete price-book ever published for the oil industry. It is cloth-bound and has marginal index so you can find any refinery, tank wagon or crude price quickly.

Put the 1924-1925 OIL PRICE HANDBOOKS in your library *now* at the special price of $6 for both volumes.

Send Your Order Today!

Only a limited number of the 1924 and 1925 OIL PRICE HANDBOOKS are left. When these are gone, no more will be published. The cost of compiling and printing a year's oil markets in one handy volume costs us thousands of dollars. We are able to offer them to you at this extremely low price because of the big demand for a price-book reference of this kind from oil men all over the country.

To make sure you have both the 1924 and 1925 price-books—*send your order today*—before they are all gone. Use the coupon below.

NATIONAL PETROLEUM NEWS
Caxton Bldg.
Cleveland, Ohio

Date _____

Send me 1 copy each of the 1924 and 1925 OIL PRICE HANDBOOKS—both volumes complete for $6.

Enclosed is check for $6.

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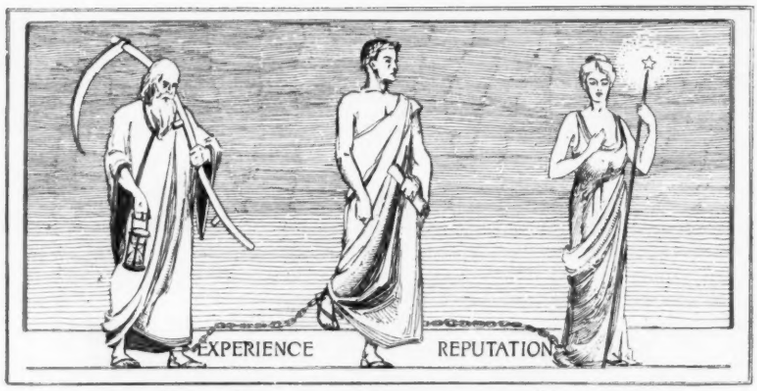


"A good reputation is gained by many acts and lost by one."

EXPERIENCE and reputation are hard taskmasters.

When a business is largely based on service, these two will keep their victims "hog tied and shackled."

We have established a reputation because of our experience and connections, which continues to impose greater and greater obligations upon us.

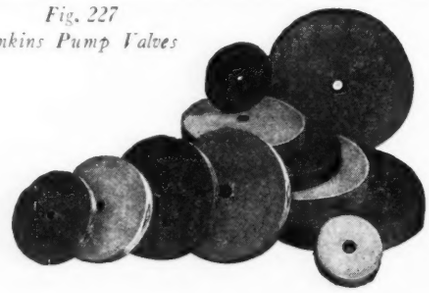
We will supply your requirements of gasoline, kerosene, fuel oil or gas oil quickly and efficiently. Write, wire or phone us your requirements.

STEINER OIL COMPANY

346-54 Harvey Snider Bldg. Phones 3851; 2-1428; 2-1429

WICHITA FALLS, TEXAS

Fig. 227
Jenkins Pump Valves



Choose your pump valves carefully

The efficiency of a pump can be no greater than that of its valve. The choice of a pump valve therefore is a most important one.

Jenkins Pump Valves can be relied on to keep the efficiency of a pump at its highest. The choice of Jenkins means long wear, also.

Jenkins Pump Valves are made in compounds exactly suited to various service. Send for a schedule of principal compounds.

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80 White Street . . New York, N.Y
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Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

of the men who handle the gasoline pumps and sell lubricating oil on the station drive. Just back of the filling station office is a ladies' waiting room. Besides having adjacent toilet facilities this waiting room is a place of pleasing comfort. There are rugs on the floor, upholstered chairs, magazines on the table and curtains at the windows. Awnings and flower boxes are discernible in the picture.

The front compartment at the left end of the pits is a waiting room for men. It is slightly smaller but as well equipped as the women's compartment. These rooms are arranged with the idea in view that people will drive their cars to the Greasing Palace and wait 20 minutes while they are greased. Twenty to 25 minutes is required to do a complete greasing and oiling job. Behind the men's room is the office of the chief greaser. (A greasing crew is composed of negroes with a white man in charge.) The greaser's office has a desk to be used by a man standing, a built-in steel money chest and a stock of blank forms.

Records of Customers

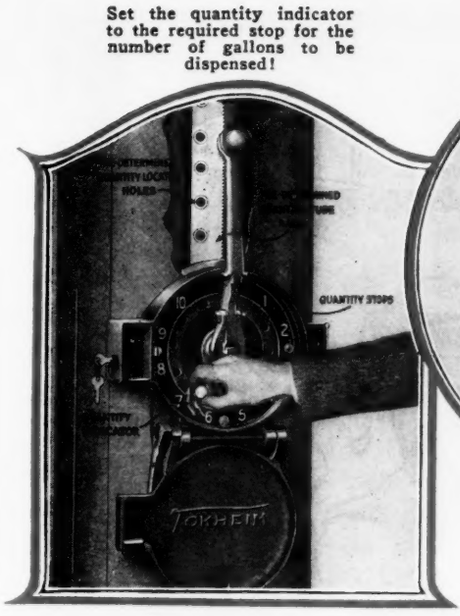
IN the head greaser's office a record is kept of every car served. It is a card which the supervisor himself fills out. The record tells the customer's name, address and telephone number, the date, the make of his car, the license number and the speedometer reading; it tells the kind and the quantity of oils and greases put in and the price of them; it tells the character of the service rendered both free and paid, and it shows the name of the man in charge and the man who actually did the work. These cards are used for follow-up advertising, for checking with the cash and for accounting for customers' complaints, if any.

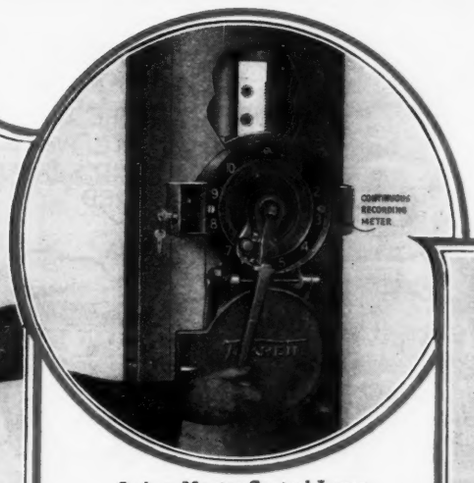
Just back of the greaser's office is the furnace room. These greasing palaces are all-year affairs. They may be closed in winter and are heated with steam. Radiators are just under the street level floor between the drain pits. Doors may be removed in warm weather and stored in a locked cabinet behind the advertising panel by the drive. These bill boards are never flat against the wall but space for door-storage is left purposely behind the board at each station.

Under the offices and waiting rooms on the lower level of the greasing palace, private compartments for general utility were incorporated in the plans. There is a locker room for the white men at one end and for the colored men at the other. At one end is the coal storage, a small storage room for oil and grease is at the other.

The stationary tanks containing the greasing palace's working supply of oils stand in a row along the back basement wall. Above them, in front of the motorists as they drive in, are 10 oil pumps. There is one pump for kerosene, one for flushing oil, one each for three grades of Ford oil, one each for four grades of Opaline and one pump

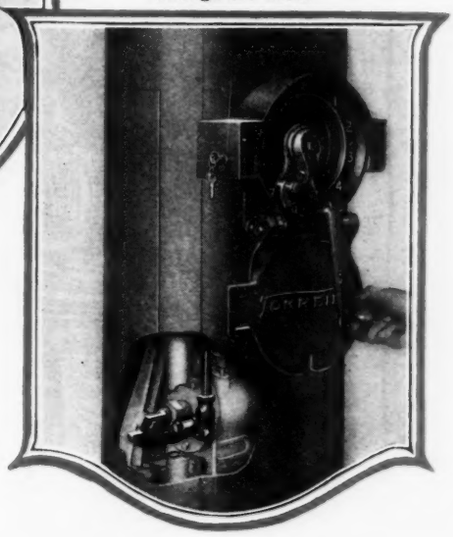
Set the quantity indicator to the required stop for the number of gallons to be dispensed!





Swing Master Control Lever into clockwise rotation until it automatically stops at the quantity indicator!

Pull out on Master Control Lever to discharge gasoline through the hose!



These 3 Operations Discharge Gasoline in the NEW Tokheim Cut 600!

THINK of it! But 3 operations—performed with lightning speed by the Master Control Lever—to discharge 1 to 10, or any intermediate number of gallons, through the new Tokheim Cut 600 Pump!

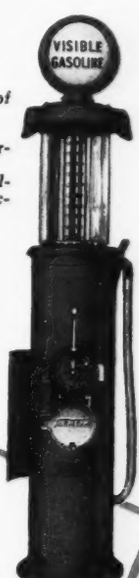
Predetermined, premetered quantities, too —Always Right!

The illustrations above show how easily and quickly these operations—just 3 of them —are performed.

It's just Set—Swing—Jerk! One, two, three! And your cash register jingles with business! Lightning speed and Always Right —that's the Tokheim Cut 600!

(10 gallon capacity, hand or power operated)

The elimination of yearly models! Master controlled! Positive predetermined quantities! Mechanical Recording Meter, 99.9% accurate.



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Fort Wayne, Ind. U.S.A.

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Tokheim Oil Tank & Pump Co.
1802 Wabash Ave.,
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Gentlemen: Please send me a copy of your booklet, "It Increases Business Because It's Always Right," describing your new Master Controlled Cut 600 Pump.

N.P.N. Sept. 1, '26

HA! HA! HA! BILL GOT THE DROP ON HIM 'FORE HE COULD MOVE
—AND WHILE YOU'RE STICKING AROUND JUST GIVE THE CUSTOMERS SERVICE WHILE OUR AIR PUMP'S BEING REPAIRED
FREE AIR
GASOLINE
Service
SEDGWICK

TWO-GUN PETE HOLDS UP THE WRONG GAS STATION

for Liberty—Sinclair's premium lubricant.

New Service Features

WITH the greasing palace have come five items on the oil man's free list. Some jobbers may have included all of them among things given away at filling stations for a long time, but they are not always donated with gasoline.

It is assumed, with the attractive rest rooms handy that occupants of the cars will get out while the cars are being greased. The attendants do not insist upon this but that is what usually happens. And when the occupants are gone the cars are dusted inside with a suction cleaner. An electric cleaner is available on the floor of the greasing palace and it can be plugged-in at electric connections around the wall or in the little iron posts that stand between the driveways at the front of the building. By the way, these little iron posts have dull red lights on them at night to keep customers from driving upon the level concrete slab instead of over an opening—in which case he would have to back out and enter again.

Besides dusting the car inside, the attendants always wipe off the customer's windshield. Then too, if the machine is not too dirty they wipe it off gently all over. If it is too dirty they do not touch it because working at the grit without proper laundry equipment scratches the paint and injures the car's looks. They oil all locks and hinges on doors and hood without charge.

Distilled water for batteries is the fifth item. It is always available and used freely in customers' cars at greasing palaces. The usual free air and water service is available on the station drive, but in addition to that the greasing palace has three air lines on reels mounted on the rafters above the pits. Any hose may be pulled down to reach any tire in the building, or even serve a car on the station drive.

Standard Equipment Used

ALL the equipment now recognized as standard in good greasing pits is used at the Sinclair palaces. Crank case drainings are caught in a funnel at the end of a pipe, and the pipe is so jointed as to permit the funnel to be placed anywhere under the car to catch the oil. This crankcase oil drains by gravity through a system of pipes to a tank outside of the basement. The waste oil may be pumped from the tank at an out-of-the-way spot near the coal chute.

The four greasing palaces to be opened are No. 4 at 35th St. and South Park Ave.; No. 5 at Oak Park Ave. and Madison St., Oak Park; No. 6 at 65th St. and Stony Island Ave., and No. 7 at Ashland and Lawrence Aves. All but two of these establishments will be equipped to take care of six automobiles at once. No. 1 has eight pits and No. 4 will have 10 pits. Incidentally these larger palaces also are being provided with parking space for a dozen or more machines so customers may leave their cars all day to be greased at a convenient time. Both stations are on bus lines and close to other public carriers. This enables a customer to leave his car to be greased as he goes down town to business, coming by for it again in the afternoon.

Open Usual Hours

ALL these greasing palaces will be open approximately the same hours as a service station, 8 a.m. to 10 p.m. The men work two shifts (a) from 8 a.m. to 6 p.m., and (b) from 12 m. to 10 p.m. This puts a heavy shift on every station from noon to 6 p.m. The operation of all these extra establishments and the use of so many men of a new type, has caused the management to create a new office: greasing palace superintendent. The job has been filled from the ranks of service station men and the holder is H. A. Furlong, recently of Greasing Palace No. 2.

These greasing palaces are not the first venture Sinclair Refining Co. has made in extensive greasing service in Chicago. It has already been proven profitable. Three years ago Alemite became popular and greasing racks began to spring up in vacant lots all over cities. Usually they were one man, $50 worth of credit, a 4 by 6 wooden office and a tall wooden rack for the car.

(Continued on page 64)

The Editor's Viewpoint

National Petroleum News

Present Stocks Should Not Bear Market

WHEN are gasoline stocks too large?
When are gasoline stocks too small?

These questions have been bothering the oil industry for years. They have not been answered. Probably they will not be answered definitely. However, the oil industry can appreciate a trend and approximately place at least a sentimental value upon the size of gasoline stocks.

The trend of gasoline stocks for the past few years has been downward, in terms of days' supply. For illustration, the stocks in the Mid-Continent district July 1, 1923, represented 64 days' supply. Today they represent but 23 days' supply. The same trend has taken place in the rest of the United States where, exclusive of the Mid-Continent, stocks in 1923 represented 75 days' supply and July 1, 1926, 63 days' supply.

The big company executives look at their inventories, measure them in dollars, figure out the interest and maintenance charges and say that there is too much gasoline on hand. Probably there is from the standpoint of a man struggling to keep down his cost. Probably the industry could run with less stocks of gasoline.

But at the same time if the industry would view these stocks with a reasonable degree of satisfaction wouldn't it tend to bolster up the prices at which those products are being sold?

Take today for instance. Every refiner and every marketer should look upon the fact that the Mid-Continent refiners have cut their gasoline stocks down from 64 days' supply to 23 days' supply in three years' time. As an indication of stability and of conservative operation, couldn't they feel in their own hearts that 23 days is not far out of line?

In fact, looking at it from a practical standpoint, would the gasoline market be any materially less because the stocks might be 25 days or even 30 days, or would it be any materially more because the stocks might be 15 days?

In the oil industry's present frame of mind the chances are there wouldn't be much material difference in the price, because the oil industry has viewed for years a great many hundreds of millions of dollars tied up in inventories. It has viewed the big interest charges and the maintenance costs that have had to be paid each year and has felt that if it could only cut that cost it could save considerable money for profits. And that point of view has undoubtedly caused the industry to continually carry in its mind the thought that stocks are too large. It has carried this thought to the point where it has had a continual bearish effect upon all markets.

As a matter of fact, nobody knows just how large actual stocks the industry should carry. Obviously, in a rough way, it ought to be enough so that all orders coming in with reasonable regularity could be filled with reasonable promptness and there still be a reasonable margin of stocks on hand against some unforeseen railroad tie-up, or some unexpected long stretch of exceedingly good motoring weather. What that should figure out into in terms of gallons of gasoline most everyone will have his own answer.

But 23 days' supply for the Mid-Continent refiners is not an excessive supply. It should not be considered enough to have any adverse effect upon the market, nor so little as to unduly boost the market.

The whole oil industry could well begin to take thought on this and see if it could not come to the general conclusion that 23 days', more or less, supply of gasoline in the Mid-Continent field is not an unreasonable quantity. Let the refiners work the stocks down still further if they will and if they can in safety to their customers, but let it be considered somewhere near a safe figure and see if the industry's psychology, if its greater confidence in the stability of the market cannot serve to improve market conditions.

It certainly is a crime that an industry which is handed a 20 to 25 per cent increase in consumption every year can't operate in all its branches at a reasonable profit each year.

A little more optimism these days without increasing runs or stock should help materially towards better returns.

—W. C. P.

Attack the Vilifiers

F. L. Thomson, president of the Grayburg Oil Co. of San Antonio, Texas, is to be complimented upon taking a hand in the recent gubernatorial campaign in Texas, on behalf of the Oil Industry.

During the heated argument as to whether "Ma" Ferguson should get the Democratic nomination for governor, Mr. Thomson issued a signed statement, which was generously published in the press of Texas, showing some of the nonsense—yes—and some of the lies—that were being told by some of the candidates for governor, particularly Lynch Davidson.

Mr. Davidson is wealthy. He made his money in the lumber business. He should be considered a business man, yet, when he got to running for governor, he did everything to the oil industry that he wouldn't want another business man to do to the lumber industry. All the crass, nonsensical, foolish, untruthful statements that could be made against any business, Davidson made against the oil business. He out-did McMasters, Bryan and the Federal Trade Commission of the old days.

There was so much vilification by Davidson and his associates that many an oil man hesitated to get into the mess, but Mr. Thomson struck out frankly and straight from the shoulder. He showed how prices of petroleum products had always been fair to the people of Texas, and how gasoline today is a better buy than almost any other commodity.

The only way that this vilification of the oil industry by politicians can be stopped is for the oil men themselves to go right into the battle and vigorously and frankly attack the vilifiers. Oil men themselves must proclaim their pride in their business. They must act and talk of that business so that the public will know that they are not ashamed of it but, instead, are vastly proud of it.

Once these vilifiers know that the oil men will fight, they will shut up.—W. C. P.

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ascending which a driver got a new sensation every time. It was at this juncture in the industry's advancement that Sinclair began a large greasing service at 26th St. and Michigan Ave.

First, Sinclair built lower wooden racks. There were four in a row on a vacant lot near a filling station. They were shaded and advertised at the same time by a bright striped awning. The racks were so low that a slight excavation was made under them to give the service men work room. These racks are still being operated profitably but are not on company-owned property and may be discontinued.

Greasing Profitable

NOT only did this venture under the striped canopy prove profitable, but it also won new customers. Now the company hopes to repeat this program of good will and friend-making at seven strategic points in Chicago and Oak Park. The price list is as follows:

Fords with oil cups	$1.00
Fords with Alemite	1.00
Fords not so equipped	1.25
Other cars with oil cups	2.00
Other cars with Alemite	2.00
Other cars with grease cups	3.00
Ford springs oiled	.25
Other cars' springs oiled	.75
Transmission oil per pint	.25
Opaline per quart	.25
Liberty Aero oil per quart	.35

It has been hinted that there may be a service price lower than the general one and higher than the special Ford price to be applied to service on certain medium sized cars. This, however, is not assured.

EWEN, MICH.—A bulk station has just been completed here which will be operated under the name of the Valley Oil Co. E. W. Slocum is manager. Wadhams gasoline and oils are handled.

The station consists of storage tanks for gasoline and kerosene, also warehouse for oil and grease storage.

WESTON, W. VA.—West Virginia's roads are being put into good shape as fast as possible to accommodate the increasing numbers of tourists who come into the mountains for fishing and camping, according to Karl L. Hoskins, secretary of the Weston Oil Corp.

Mr. Hoskins reports seeing license plates from almost every state in the country.

ROCKLAND, ME.—The distribution of Colonial gasoline for Knox county has been taken on by the Thurston Oil Co. here, reports R. E. Thurston, treasurer and manager.

A 15,000 gallon tank and a gasoline pump have been installed. The company's station has been painted and modeled in the color scheme of Colonial Filling Stations, Inc.

Water Tubes in Pipe Stills Would Cool Oil Tubes and Make Needed Steam

By B. N. Broido
Consulting Engineer, The Superheater Co., New York
Delivered before Meeting of A. S. M. E., San Francisco, June 28

PART 3

Mechanical Design of Pipe Stills and Heat Exchangers

AS mentioned before the main reason for the rapid development of the pipe still is due to the fact that oil flows through the tubes with high velocity, protecting them from overheating. Particularly in cracking stills, the high velocity of the oil keeps the liberated carbon in suspension and carries it along so that it settles in containers which are not in contact with the hot gases, and from which it can be removed easily. With earlier pipe stills, various devices had to be used in order to protect the bottom of the shell directly exposed to the furnace. None of these devices, however, were as effective as the high velocity of the oil. Tubular heaters on pipe stills are therefore now being used successfully whenever it is necessary to heat oil, particularly for higher pressures. They are used for reheating oil before fractionating, for rerunning light distillates, but more particularly, however, for cracking oil by various processes.

There is liable to be one difficulty with pipe stills. In the old shells any carbon accumulating at the bottom could be removed comparatively easily by having the shell cooled off so that a man could get inside through a manhole or other opening placed in a convenient location and remove the carbon. The only way to clean pipe stills is from the tube ends. The pipe still must therefore be so constructed that each end of the tubes is easily accessible.

One of the first pipe stills built was in connection with the Burton process. It was designed similar to a water-tube boiler where the tubes are rolled in headers having handholes opposite the tube ends. These stills have only natural circulation and the velocity of the oil is therefore comparatively small. However, the advantage of high velocity in pipe stills is now fully recognized, and those in connection with other processes are arranged so that the oil flows through the tubes which are in series and have return bends on the ends. Stills must be so designed as to allow access to the tubes.

The recently developed pipe stills are made of straight lengths of pipes connected by return headers to form a continuous coil or series of coils. There is a handhole opposite the end of each tube, closed by a removable tapered, screwed, or ball plug. In some designs the entire return head is made removable. All of the return headers and plugs are exposed by opening a door in the setting wall, and the tubes are then opened for their entire length by removing the return bend or the plug opposite each end. A cleaner or scraper can be put through every tube without cooling down the setting and with a minimum of effort.

Design of Return Bends

THE application of the pipe still has considerable influence upon the design of the return bend and joint. For instance, if heavy oil is heated to high temperatures and pressures, a part of it becomes decomposed or cracked to a lighter oil, in which case carbon necessarily deposits in the tube and has to be removed frequently. For this reason the accessibility of the ends is of utmost importance.

When naphtha is heated to a moderate temperature at low pressure, less expensive joints can be applied.

The frequently used cast-steel return bends, into which two tube ends are expanded and which are provided opposite the tube holes with screwed or handhole tapered plugs, are well known and need not be described here.

Fig. 7 shows the tube assembly of a pipe still applicable for cracking of oil at high temperatures and pressures. Of particular interest is the joint, Fig. 8, between the return bend and the pipe. This ball clamp consists of a pipe *A*, the ends of which are offset to a ball end in a forging machine and then machined and ground to correct contour. The return bend *H* is of cast steel and the seat to receive the pipe ball ends is machined and ground to 45 deg. The clamp *E* for securing the tubes to the return bend is of drop-forge steel in which is inserted a split washer *F*, the removal of which permits the application and removal of clamp *E* over pipe ends. The connecting bolts and nuts are made from high-grade alloy steel. This arrangement has proved very satisfactory for the severe service of a pipe still for oil at high pressures and temperatures. Many refineries now consider it the most reliable and safest joint for this service. This arrangement has also the advantage that a tube can be transferred from one location to another in the pipe still and can also be turned in its place.

In cases where a comparatively inexpensive construction is desired and where replacement of tubes cannot be accomplished in a short time, the design shown in Fig. 9 offers some ad-

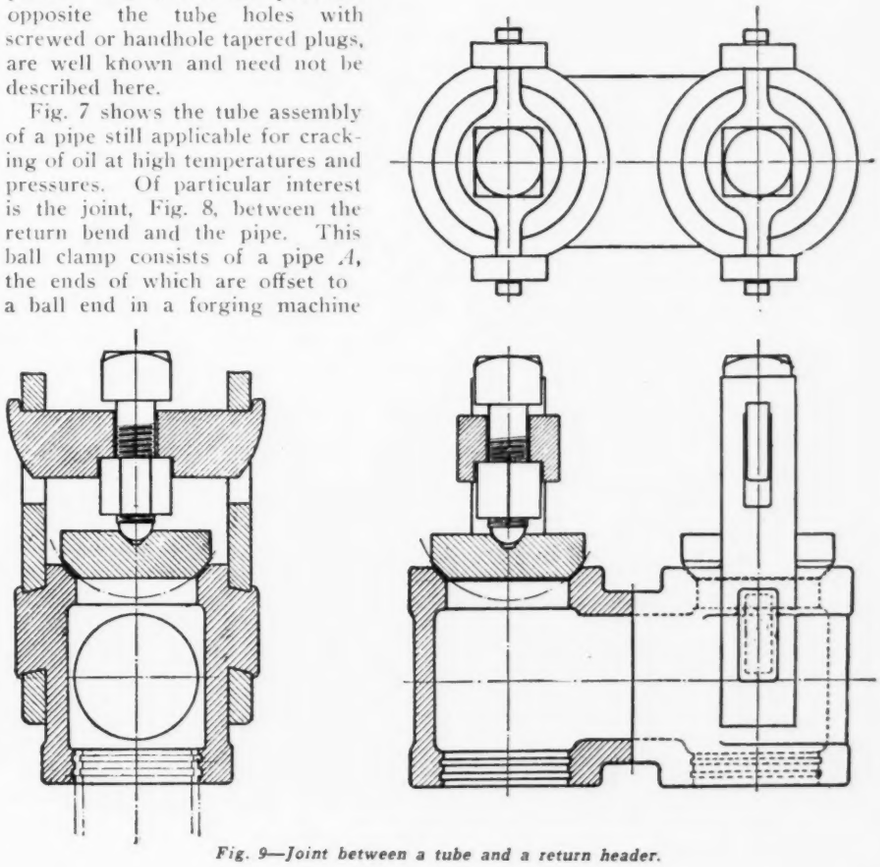


Fig. 9—Joint between a tube and a return header.

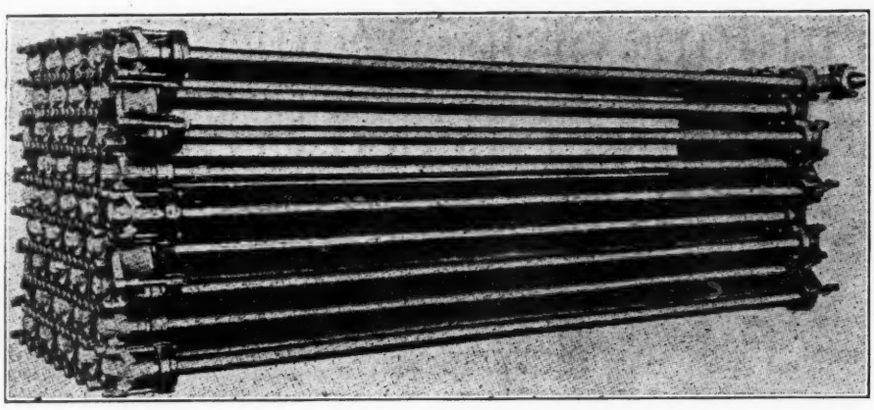


Fig. 7—Assembly of tubes and return bends for a pipe stills.

vantage. Since commercial pipes can be used, it is not necessary to have them go through a shop. These designs consist of a return bend into which the tubes are expanded and which are provided with ball plugs opposite the two ends. These designs are recommended where either heavy or light oil is heated to moderate temperatures. For large pipe stills, sometimes a combination of any two of the above designs can be applied, in which case joints like that of Fig. 9 are placed in the cooler part of the still.

Fig. 10 shows return ends made from either drop forgings or cast steel. In this design the closure cup, which is inserted in a tapered seat, is held securely by means of a holding member and setscrew, which are in turn held by overhanging lugs or a yoke. The application of a graphite paste is required on the cup in order to insure tight joints for high pressure and temperatures.

Downward Gas Flow Advised

THE arrangement of the tubes with respect to the gas flow is worthy of serious consideration. From many pipe stills the author has observed in operation he has found that whenever possible it is advisable to have the gas flow downward over the tubes. Any solid carbon precipitate is heavier than the oil, and settles at the bottom of the tubes. With the gases flowing downward, the upper part of the tubes is in better contact with the gases, while the lower part hardly comes in contact with them. The carbon, therefore, does not bake on the tubes and is considerably easier to remove.

As in many other heat-transmission apparatus, it is advisable to have the gases flow opposite to the direction of the oil, or have the oil enter where the gases leave the still and the oil outlet where the hottest gases enter the still. With this arrangement, heat transmission is very efficient. The gases can also be cooled off to a minimum, increasing the efficiency of the still. In some cases, however, in connection with pipe stills, deviations may be advantageous.

With highly viscous oil, which would cause a high pressure drop through the still, it may be advisable to arrange the oil to enter the still where the gases first come in contact with the tubes, in order to decrease the viscosity quickly. After the viscosity is reduced a reasonable amount, the oil is carried to the lower part of the still and flows in the direction opposite to the gases.

In some cases where heavy oil is used, particularly with the gas flowing upward, a mixed-flow arrangement is found. The oil enters where the gases leave the still. It flows in the direction opposite to the gases for about half-way. It is then carried to the hottest part of the still with a comparatively low temperature and flows in the same direction as the gases, so that the oil leaves the still at a comparatively cool gas zone.

Heat Exchangers

HEAT exchangers are usually understood to be devices for transmitting heat from a hot fluid which is to be cooled to another liquid which is to be heated. Particular attention has been given to the design of heat exchangers in the past few years due to their wide use in the petroleum industry, especially since the development of the oil-cracking processes. These heat exchangers are of two general designs: first, the shell type as shown in Figs. 11, 12, and 13, having a bundle of tubes located in a casing or shell. A number of small smooth or corrugated tubes, straight and parallel, are either rolled, threaded, or brazed into two tube sheets, forming a tube bundle. In some cases one of the tube sheets is made integral with the round casing or shell, but in most instances it is independent of the casing. In order to take care of the difference in expansion between the tubes and the shell, the floating-head design is often applied, which can move to a slight degree independently of the shell. In some designs the floating head travels in a packing gland, which permits all joints on the heater to be ex-

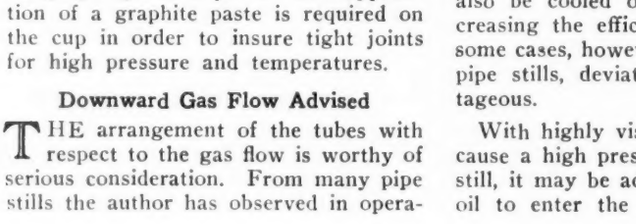


Fig. 8—Detachable joint between a tube and a return bend.

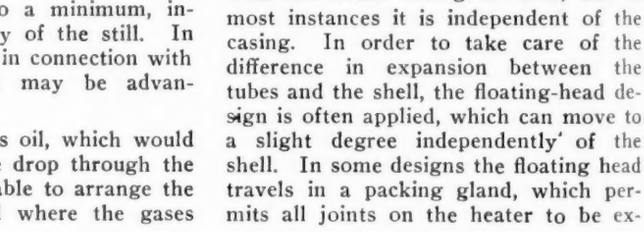


Fig. 10—Joint between a tube and a return header with a tapered cup plug.

Fig. 11—Heat exchanger with a zig-zag baffle.

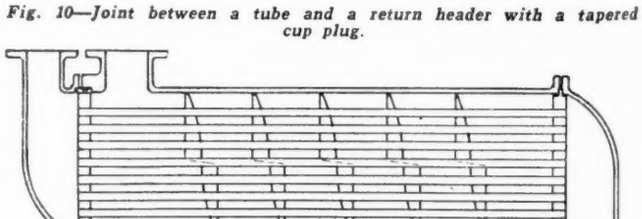


Fig. 12—Heat exchanger with a spiral baffle.

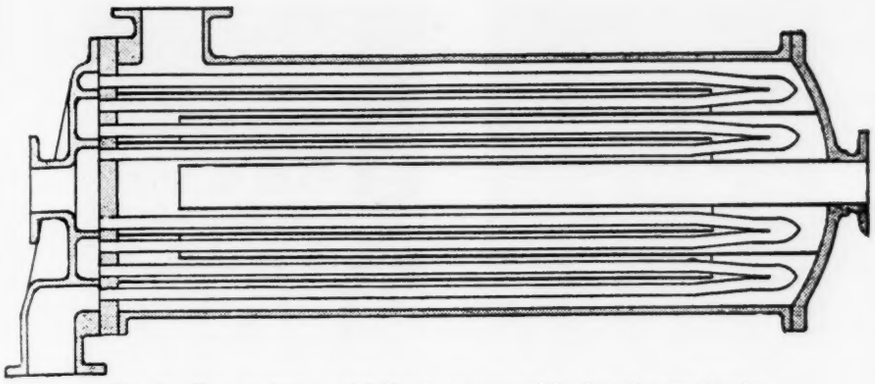


Fig. 13—Heat exchanger with U-tubes connected by forged return bends.

ternal so that the smallest leakage can be detected instantly. In other heaters the floating head is merely guided in the shell, which has a separate head at that end.

In order to increase heat transmission, the heat exchangers are very often designed with one or more passes as regards the flow through the tubes. The shell is also frequently provided with different arrangements of baffles to bring the liquid outside the tubes in better contact with the surface. In general, heat exchangers are made at least two-pass or multiples thereof in order to have the inlet and outlet to the tubes at the same end, thus making the piping and connections much simpler.

Fig. 11 shows one baffle arrangement of an exchanger by means of which the liquid is given a zig-zag flow normal to the tubes. This gives, as mentioned in a previous paragraph, a considerably better heat transmission.

Fig. 12 shows a spiral baffle arrangement. This has practically the same effect as the zig-zag, but it also causes, to a certain extent at least, turbulent flow, which is supposed to increase still further the heat-transfer coefficient.

Tubes Expand Separately

A RATHER novel arrangement of a heat exchanger is that shown in Fig. 13. The heating surface consists of U-tubes connected by return bends made by a special process of forging the pipe itself. With this arrangement each U-tube can expand individually, or independently of the others. Each leg of the U-tube can be cleaned to the very end of the return bend. The number of joints between the tubes and tube sheets for the same length of tubes is reduced one-half. Both liquids flow parallel to each other, but the arrangement of the concentric baffles causes high velocities of both liquids, so that a high degree of heat transfer is secured. With this arrangement each liquid also flows counter to the other through the entire length of their travel.

The tube material to be used in oil exchangers depends upon the characteristics of the oil handled. With some oils steel tubes and sheets can be used, while with others various copper alloys must be employed to avoid chemical action of the oil on the tubes. In some cases, even the baffles must be made of non-ferrous metal. When exchangers are used as coolers and the cooling medium is salty water, it is often necessary to line the header with zinc in order to retard the electrolytic action at the tube joints.

Where the temperature difference between the liquids is high and a considerable amount of heat is to be transmitted between comparatively small amounts of oil, the double-tube type of heat exchanger is used. One arrangement of an exchanger of this type is shown in Fig. 14. It consists of sections, each having a smaller-diameter pipe concentric inside a larger one. Both pipes have their ends connected by return bends in such a manner as to form two independent flows, one inside of the other. The design of this exchanger is of interest because no gaskets are used. All connections are metal-to-metal ball joints. This design is very flexible. It is especially adaptable for high temperatures and pressures, as a large amount of expansion and contraction can easily be taken care of without objectionable strain on the joints or tubes.

Only one end of the inner tube is fixed in the return bend, common to both pipes. The other end of the inner tube is joined to a return bend which floats in the larger one of the other pipe, so that each pipe can expand or contract individually. This heat exchanger is simple to clean, as it is only necessary to remove the outside return bends and the inner tube can be withdrawn. A perfect counterflow is possible so the heat-transmission effect is very high.

Conclusion

IT should be seen from the foregoing why the design of oil-cracking stills lies so largely within the province of the mechanical engineer. For the most part the problems calling for solution are dependent upon matters with which he is already familiar, such as the efficient generation of heat, heat transmission, the flow of fluids, and mechanical construction for high pressures and temperatures. In furnace design it is imperative to generate heat efficiently and distribute it evenly over the heating surface and at the same time avoid overheating of the tube bank generally or in any one part.

Heat transmission in pipe stills and heat exchangers brings in the transfer of heat from gases to liquids of widely varying viscosities, also from one liquid to another of a widely differing temperature. The mechanical details call for a design that will not only withstand the action of high pressures and temperatures, but one that can be readily dismantled for cleaning and renewal of the heating units.

It is hoped by the author that he has succeeded in presenting a clearer picture to the refinery man, as well as to the mechanical engineer, of the possibilities held by the problems in this field, and one that will induce them to exert their efforts to further advancement and improvement.

APPENDIX NO. 1

IN order to determine the heat transmission from hot gases to a steel tube and to banks of tubes located normal to the flow of the gases and containing a flowing liquid, H. Reiher made

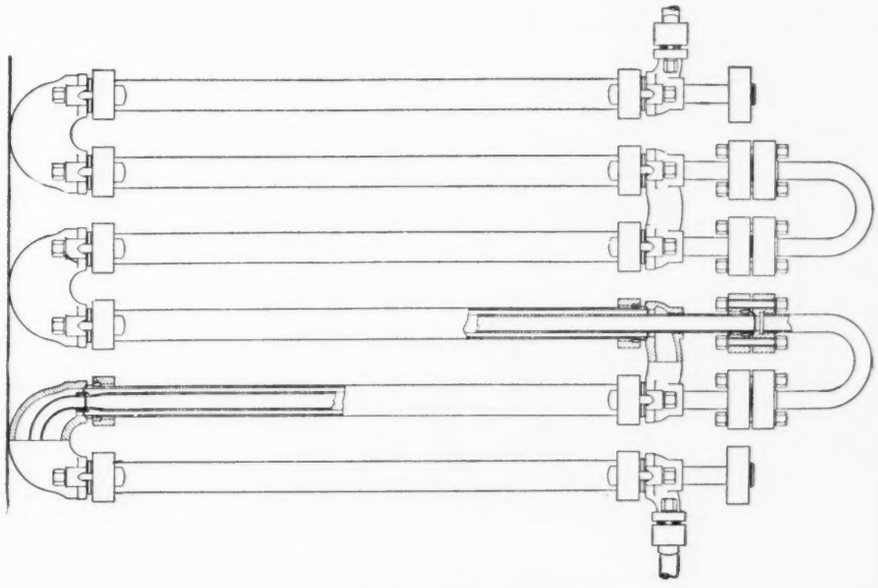


Fig. 14—Double tube heat exchanger.

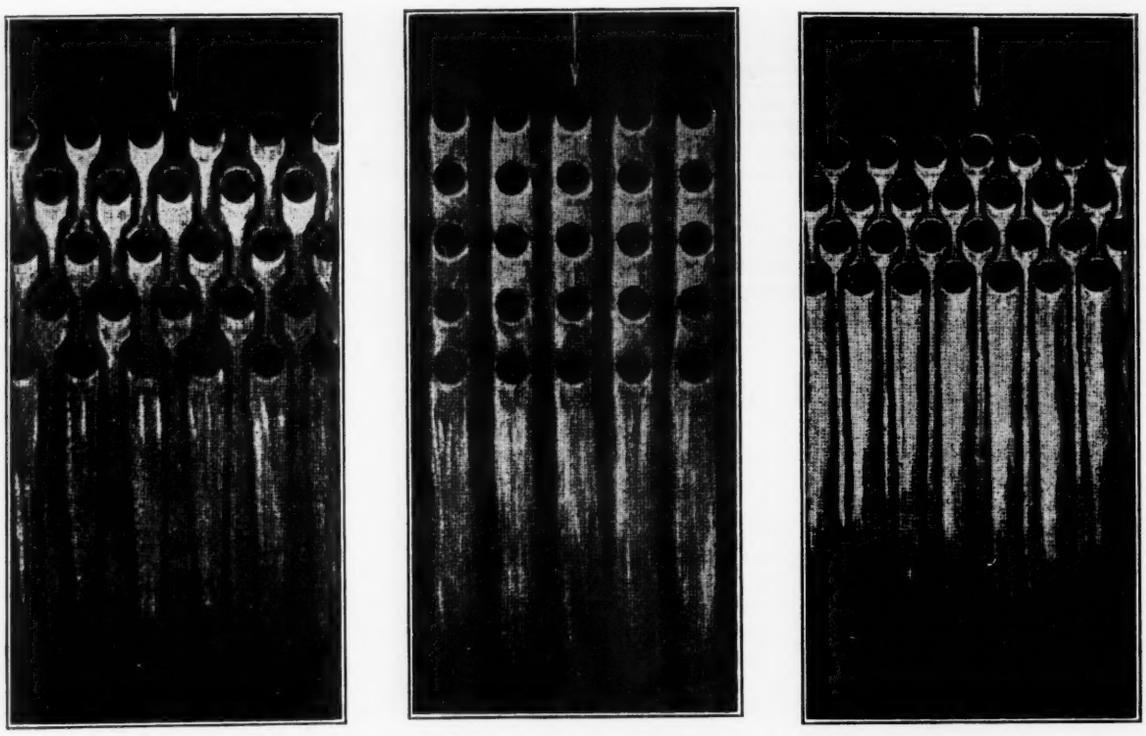


Fig. 15—Gas distribution over straight and staggered rows of tubes.

extensive tests in the research laboratory at Munich, Germany. His apparatus consisted of tubes from 0.46 to 2.8 cm. o. d., and tests were made with air velocities of from 5 to 15 meters per second, and gas temperatures up to 200 deg. cent. By means of the law of similarity he extended his investigations to cover also heat transmission between flue gases of considerably higher temperatures and tubes of larger diameters. Coefficients were also established for banks of tubes in straight as well as in staggered rows.

Of considerable interest is Fig. 15, showing the distribution of a gas flow over banks of tubes with different tube arrangements.

H. Reitschel also made similar tests at the research laboratory in the Technical College of Berlin. Both experimenters found that the heat-transmission coefficient h from gas to a pipe is

$$h = C\frac{\lambda}{d}\left(\frac{wdp}{\mu}\right)^n$$

where

h = heat-transmission coefficient in kg-cal. per sq. meter per hr. per deg. cent.

λ = conductivity coefficient in kg-cal. per meter per hr. per deg. cent.

p = mass density in kg-sec.^{2} per meter^4

μ = viscosity in kg-sec. per sq. meter

d = pipe diameter in meters

w = maximum gas velocity in meters per second.

The exponent n is constant, while C is a function of the number of pipe rows. For the same conditions, however, the values of n and C varied slightly in the tests of the above experimenters. This seems to be due to the fact that Reitschel's formula is applied to low velocities, while Reiher's experiments do not go below 5 meters per second.

In accordance with the above

$$\log\frac{hd}{\lambda} = \log C + n\log\left(\frac{wdp}{\mu}\right)$$

This equation for both Reiher and Reitschel's experiments is plotted in Fig. 16. The slope of the lines gives for Reitschel,

$$n = 0.59$$

and for Reiher,

$$n = 0.69$$

(Continued on page 74)

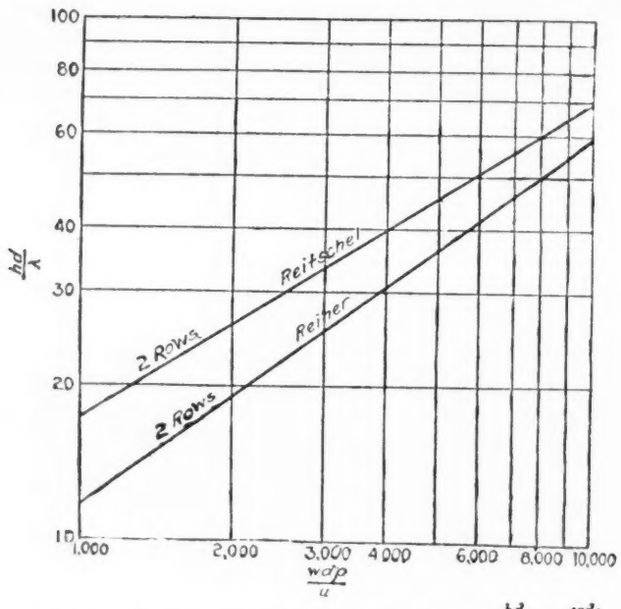


FIG. 16 CURVE SHOWING THE RELATION BETWEEN $\frac{hd}{\lambda}$ AND $\frac{wdp}{\mu}$

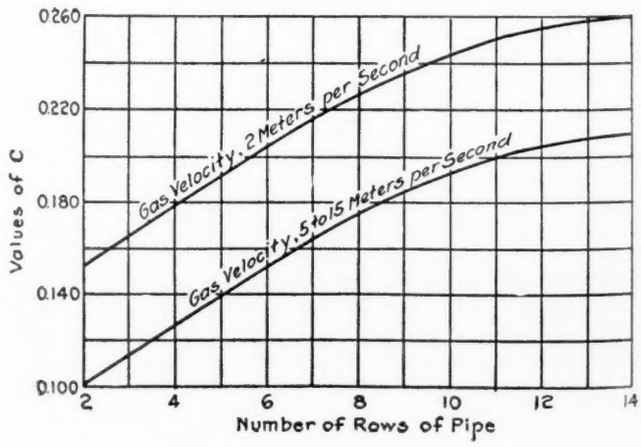


Fig. 17—Curve showing the relation between C and number of rows of pipe.

Simple—Light Weight
Mechanically Perfect

Notice the simple construction of McDonald Oil Tank Vents. There are no complicated working parts. Its very simplicity insures positive action and absolute protection. Supplies vent and relieves pressure automatically.

Why pay exorbitant sums for a heavy, complex arrangement when our simple, inexpensive vent, ***listed as standard by the Underwriters,*** gives absolute protection. Standardize on McDonald Tank Vents. Made in all sizes. Write for further information.

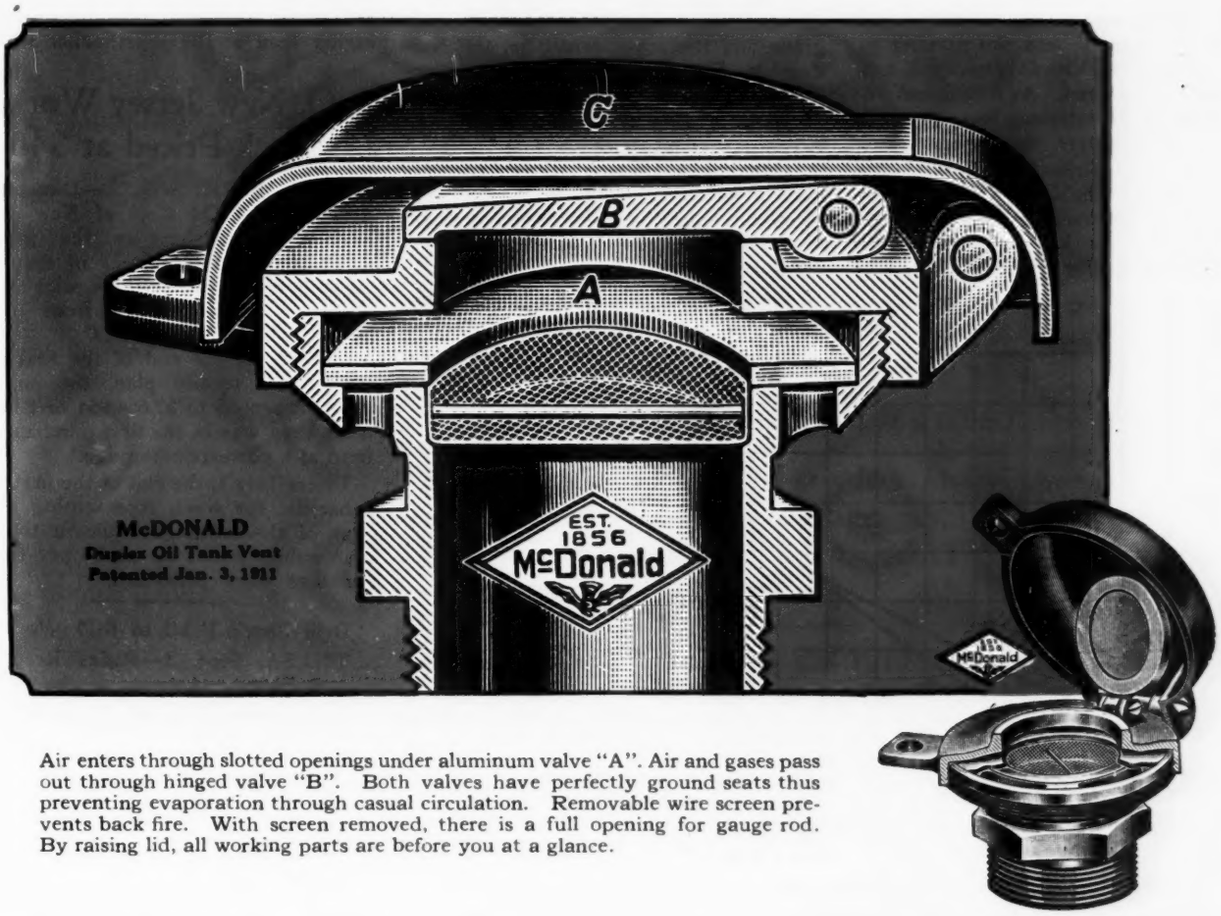
"The Home of the Swing Joint"

A. Y. McDONALD MFG. CO.

Dubuque, Iowa

OMAHA MINNEAPOLIS DES MOINES KANSAS CITY

There's a McDonald Distributor Near You



Air enters through slotted openings under aluminum valve "A". Air and gases pass out through hinged valve "B". Both valves have perfectly ground seats thus preventing evaporation through casual circulation. Removable wire screen prevents back fire. With screen removed, there is a full opening for gauge rod. By raising lid, all working parts are before you at a glance.

McDONALD

Continued from page 72.

The corresponding values for C are given in Table 4.

Table 4 Values of C in Reiher and Reitschel's Formulas

Reiher's formula, which gives the value C corresponding to low velocities. For instance, the lowest point of the Reitschel curve in Fig. 16 is $hd/\lambda = 18$ and $wdp/\mu = 1000$ which, inserted in Reiher's formula, gives

$$C = \frac{18}{(1000)^{0.69}} = 0.153$$

If we therefore draw a curve in Fig. 17 through the point (1000, 0.153) parallel to the lower curve, this should give the values of C for low velocities.

Reiher's formula can be used then for high as well as low velocities, C to be taken from Fig. 17.

This method does not apply, however, for velocities lower than one meter per second, as at this velocity there is a considerable effect from natural convection. Fig. 18 gives the relation between the gas temperature in degrees centigrade and the mass density ρ, the conductivity λ, and the viscosity μ, in order to facilitate the use of the formula in figuring the heat transmission between gases and tubes.

It should be noted that the temperature in question is that of the gas film nearest the tube, and is assumed to be the mean value of the gas and pipe temperature.

Table 4 Values of C in Reiher and Reitschel's Formulas

	Number of Tube Rows			
	2	3	4	5
Reiher	0.100	0.113	0.123	0.131
Reitschel	0.322	0.345	0.370	.....

These experiments show that the heat-transmission coefficient is larger for pipes in staggered rows than in straight rows. The difference is smaller for low velocities, but increases with the velocity and with an increasing number of rows.

The experiments were not made for more than five rows. On account of the influence of the first effective tubes, the value of h and C is increasing with the number of rows. It is assumed that h is increasing up to a certain value where the influence of the first row will be negligible. In other words, C will be constant for a greater number of rows.

The lower curve in Fig. 17 shows the relation between C and the number of rows for gas velocities between 5 and 15 meters per second. As mentioned before, Reiher's experiments were not carried below 5 meters per second. For low velocities, Reitschel's formula is therefore more reliable. In order to apply Reiher's formula to low velocities, the values of the lowest point of the Reitschel curve, Fig. 16, are inserted in

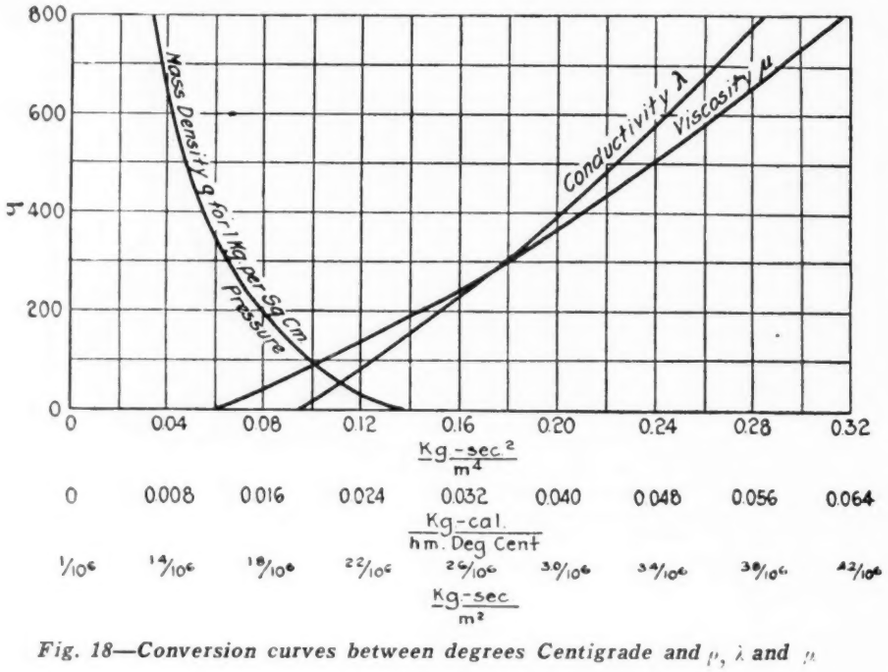


Fig. 18—Conversion curves between degrees Centigrade and ρ, λ and μ

PERRYVILLE, MO.—The Real Oil Co. has been organized here by Tom Pointeck, formerly salesman in southeastern Missouri for the National Refining Co., Cleveland, O. Mr. Pointeck has opened a bulk plant here.

EVANSVILLE, IND.—Service stations have been completed by the Standard Oil Co. of Indiana at Clarence, Wellbrook, and Greenville, Mich.

GRAND RAPIDS, MICH.—A new plant at Cadillac, Mich. has been purchased by the Mackinaw Trail Oil Co. Pure Oil Co.'s products will be distributed.

The company's service station here is equipped with Alemite air-driven grease pumps and other features, to render the motorist quick and complete service.

Good Well Is Drilled East of Fort Sill

TULSA, Sept. 2.—An interesting well of the past week was the No. 1 Guthrie of Westheimer & Daube, well known southern Oklahoma operators, located in the northwest of the northwest of 19-2N-9W, Comanche county, about half way between Lawton and Duncan and six miles east of the Fort Sill military reservation.

This well, which is an east offset to the same operators' discovery well drilled in last June, had pay sand at 1843 feet, which is its present total depth, and is flowing 16 barrels an hour, having produced 465 barrels in its first 29 hours. The crude is of 42 gravity. The discovery well in this pool came in making 140 barrels initial and is still making 90 barrels a day.

Magnolia Petroleum Co. is drilling one location south of the discovery well and is now down to 1865 feet without having found the sand, although its formations apparently are running about 13 feet higher than in the Westheimer well.

S. O. New Jersey Workers' Stock Priced at $40

NEW YORK, Sept. 2.—Directors of the Standard Oil Co. of New Jersey have set $40 a share as the price of stock to be sold trustees of employes' stock purchase plan. This price will be effective for six months from July 1, last.

On July 1, the end of the first quarter of the second plan, the purchase fund amounted to $2,664,954 or $300,000 more than was in the first purchase plan fund at a corresponding age.

Under July 1, the end of the first quarsubscribe for stock representing 10 per cent of the earnings while in the first plan subscriptions up to 20 per cent of earnings were permitted.

Drill Spark Fatal to Still Workers

TULSA, Sept. 2.—Rufus Reece and Floyd Baker, employes at the refinery of the Pierce Petroleum Corp., are dead as a result of burns received Aug. 25, when, as the two were repairing a tar plug in a still, a spark from their drill ignited gas remaining in the vapor line.

Cap Reece, brother of one of the workers, suffered burns about the arms when he pulled his brother through the manhole from the blazing still. Cecil Bryson was burned about the arms and face when he reached in to attempt the rescue of Baker. Although both men were gotten from the still quickly by their rescuers, their burns were so severe that they died a few hours later at the hospital.

BROOKLYN, N. Y.—Due to increased business, larger office quarters have been taken over by the Huguenot Oil Corp. at 491 Wythe Ave. The warehouse is at 38 S. 11th St., Brooklyn, reports Harry D. Reiber, secretary.

Quality

CHAMPLIN GUARANTEED STRAIGHT-RUN GASOLINE

What's the Answer?

THE Champlin Refinery has always been a QUALITY refinery, and always will be—manufacturing and selling on a QUALITY basis and not on a PRICE basis.

(Telegram) YORK NEBR 1013A AUG 27 1926
CHAMPLIN REFG CO ENID OKLA
ANOTHER CAR OF GOOD GAS QUICK
RYSTROM CO

What's the answer ? - - - - - -

(Telegram) ENID OKLA AUG 27 AM 11 20
RYSTROM COMPANY YORK NEBRASKA
SHIPPING NEW NAVY GASOLINE YORK
TODAY CHAMPLIN ONE NAUGHT FIVE
CHAMPLIN REFINING COMPANY

CHAMPLIN REFINING CO.
PETROLEUM PRODUCTS
ENID, OKLA.

From a Geologist's Portable--

Letters on manners, customs and events as observed by a constant and long-distance traveler.

National Petroleum News

New Moon Hotel, Baghdad
Aug. 1st, 1926.

"DEAR Gwendolynne:

"You know how cut up I was that I couldn't compete with the sheiks around the office. When I heard about a man who wanted to find some oil out where the real ones grow, I hurried. It was too good a chance to get ahead of those boys who learned their stuff in the movies.

"Of course I had to see a man in Paris. But in spite of all the 'Save a franc' signs, I couldn't save one. So I went over to Egypt. I'm not the man who put the 'gyp' in Egypt, but it's there. Their local sheiks are kinda dark for my taste, and since I was plenty 'gypped' by ordinary blokes, I didn't fancy mixing with the experts, so I wandered east.

"I had to cross Palestine. That didn't take long, but it wasn't anything like you'd think. Some places you could look over the hills for miles and not see a single Gent's Furnishings Store. I was on top of a big hill and yelled 'Paging Mr. Levy,' and nothing happened. But you just try opening a window and yelling that from the Kennedy Building and see the difference.

"The lobby of the Allenby Hotel in Jerusalem did make me homesick. It was just like the lobby of the Rice Hotel, except that you heard more English and didn't have to go upstairs for a drink.

"The local jelly-beans wear long black coats and flat derbies like Weber and Fields. They have long slippery-looking lovelocks hanging on each side of their faces, which latter were the color of things raised in the cellar. I reckon it was their white faces that caused some kind-hearted Australian soldiers to hitch them up three-abreast by their love locks and race their teams over the cobbled streets. They didn't use whips, but would usually encourage them with just the point of their bayonets. Maybe they ran into a donkey and the S. P. C. A. got after them; or maybe one of the team fell backwards and couldn't run any more. Anyway, they don't get exercise now, and there's no hope for that schoolgirl complexion.

Local Sheiks Wear Lovelocks

"Finally I got among the black tents, but it was all a mistake, as our Hindu cook says when he burns the mutton. If those birdies at home were good, these are perfect. I couldn't begin to follow our snappy local brethren but if I even said I was going to adopt the methods of real sheiks I'd be arrested in Tulsa quicker than a strange bootlegger.

"Just to show the difference, one of those highbrow English women out here said in a book that these sheiks were the only people she ever saw that looked dignified in a Ford. And I remembered that night on the road to Mineral Wells when you asked that sheik in the back seat, "can't you try to act dignified?" —and that was a Packard.

"Back in the days before the Greeks gave up their swords for shoe-brushes, an old sheik named Meichoub, or something like that, wrote a book called 'The Perfumed Garden' that is still the last word on how to be a sheik. The officers in the Royal Air Force out here are real lads and can go 'round and 'round, but they admit they have a lot to learn from that book. Still, they're learning.

Even Officers Learn From Them

"In the way of a 'line,' these sheiks seem to be well fixed. Of course, my Arabic isn't good, but they at least sound fluent. When I go to visit a sheik, we shake hands, I salute and shoot over my 'Salaam aleikum', he grabs his left collar bone and comes back, 'Wa aleikum es salaam'. I've strutted all my stuff and as we go into the tent and I sit beside him on the rug, I bring my interpreter into position. Then the old dear really unlimbers and the Arabic just rattles. After about fifteen minutes he stops for a breath, I look at my interpreter and he says something like 'He say you his father'. Before I can produce an alibi, he's started again. But although he's got a line, he doesn't need it with the ladies. They were away ahead of us centuries ago, and now they've reached the stage where they don't have to bother about women. If they see one they want, they go tell her father he can have fifteen sheep for her. Since all the sheep in the tribe belong to the sheik, it's easy to get them. Then the woman has to stay in the kitchen 'zareba', except for trips for water or fuel, and he's free to loaf around swapping yarns with the men without any danger of her yelling for him. If she develops a nasty temper, or he finds he has too many wives in the zareba, he says, three times, 'I divorce you,' and she has to skedaddle.

"The only relic of our barbarian age is the honeymoon. They move about a hundred yards from the rest of the tents for three days. Of course, he can come back and visit, but the bride must stay there. Nowadays, he often decides it's going to rain and they move back the first day. The more progressive ones say they'll soon be able to do away with it altogether.

"Now that I'm satisfied about that, I'll have to find some oil for that man. One of the flying officers said he saw some up near Mosul, and that nigger boy down near the Serai ———, —— but then, that wasn't oil.

"Give my regards to the gang in the office. I'll be back in Tulsa one of these days.

"Sweet dreams,

"Bill (Just another rolling rock-hound)."

Second Hurdle District Gusher Making B. S.

Staff Special

HOUSTON, Sept. 2.—Dixie Oil Co.'s No. 4 Hughes well in the Hurdle district, Upton county, which made 390 barrels the first hour after completion earlier in the week, had settled down to 4400 barrels daily, August 27. The flow included 60 per cent b. s. and six per cent water.

No. 4 Hughes, the second "gusher" completion in the Hurdle district, is located 660 feet southeast of the No. 2 well on the same tract, which came in for 3000 barrels, initial production, July 4. The No. 2 well has been making 1800 barrels, or more, daily, ever since.

The No. 4 well was completed at 2180 feet, or about 250 feet below the top of the lime pay horizon; the No. 2 at total depth of 2049 feet, was drilled a relatively short depth into the lime.

J. D. Leigh of San Angelo, a member of the drilling crew on the No. 4 well, was asphyxiated by the poisonous sulphur gas which accompanied the flow of oil when the well blew itself in.

H. E. Felt Goes with Dale Moore

TULSA, Sept. 3.—Howard E. Felt, assistant manager of the Tulsa offices of the American Petroleum Products Co., has resigned to associate himself with Dale W. Moore, oil buyer. He took up his new duties Sept. 1.

Mr. Felt has been in his present position six years. Following his discharge from the army he entered the oil business as an employe of the Atlantic Refining Co. at Franklin, Pa. After his practical refinery work he was assigned to the sales department.

Mr. Moore established his buying office at Tulsa in 1921. He purchases refined products for the account of jobbers and refiners. Recently he purchased large quantities of gasoline for The Texas Co.

TULSA, Sept. 2.—Charles E. Bowles, formerly assistant secretary of the Mid-Continent Oil & Gas Association and more recently an employe of the Oil & Gas Journal, has joined the staff of the Foster, Hamilton and Ryan Agency. He will serve the advertising agency as petroleum economist.

Here & There

National Petroleum News

Lloyd F. Williams, who has been in charge of the jobbing trade at Merced, Calif., for John R. Graham, distributor of California Petroleum Corp. gasoline and Ventura motor oil, has been appointed district manager for the California Petroleum Corp. at Bakersfield, Calif. A new distributing plant was scheduled to be opened at the latter point on Aug. 28. This plant closes one of the last gaps in the distribution of Calpet products from San Diego to the Canadian line.

* * *

M. F. Cowden, president, and H. S. Hayden, general sales manager, of the Pennsylvania Oil Products Refining Co., Warren, Pa., have recently returned from a tour of inspection of the company's stations in central New York. Business prospects for the remainder of the year are reported bright.

* * *

R. E. Bucklin, formerly owner of the Courtland Specialty Co., Courtland, N. Y., is now associated with J. A. Seitz, of the Seitz Oil Products Co., Syracuse, N. Y. Mr. Bucklin is preparing a book giving tests of various kinds of motor oils, according to Mr. Seitz.

* * *

Pat Quinlan, manager of the Wichita, Kan., division of the Standard Oil Co. of Indiana, and Curt Henderson, vice president of the Vickers Petroleum Co., Wichita, are among the summer widowers. Both seem to be enjoying their wives' vacations, according to reports.

* * *

L. M. Belden, president of the Ottawa Petroleum Co., Ottawa, Kan., who has just disposed of his interest in that company to the Cities Service Oil Co., is spending a few weeks in the Missouri Ozarks, most of which time is being spent fishing.

* * *

J. A. Vickers, president of the Vickers Petroleum Co., Wichita, Kan., is playing horseback croquet, generally known as polo, at Colorado Springs. During his absence, C. L. Henderson, vice president and general manager, is in charge.

* * *

P. O. Dowlen, who is with the Roxana Petroleum Corp. at Houston, Tex., and Mrs. Dowlen, have returned from a two weeks' vacation trip to Eureka Springs, Ark. and Tulsa, Okla.

* * *

I. L. and O. C. Dunn, of Marietta, O., and Tulsa, Okla., have completed a business trip to Bradford, Pa. and New York City. They were accompanied by their families. Much of the trip was made by motor.

L. L. Doerfler, president and manager of the Northwestern Petroleum Co., Inc., Appleton, Wis., has purchased the interests of his associate, John Rock who was formerly secretary and treasurer of the firm.

At a stockholders' meeting on Aug. 16, it was decided to change the name from Northwestern Petroleum Co., Inc., to Northwestern Petroleum Corp.

* * *

W. D. Hann, district sales manager at Atlanta, Ga. for the Galena Signal Oil Co. of Texas, has been confined to the hospital since Aug. 10 because of an operation for appendicitis. He has recovered completely now and is back on the job at the office.

* * *

C. E. McClement, formerly bulk sales representative at Minneapolis for Sinclair Refining Co., Chicago, has installed bulk storage at Mound, Minn. and will distribute Shell products. Mr. McClement is operating under the name of the Service Oil Co.

* * *

J. R. Merideth, superintendent of the Walker Oil Co., Pentacre, W. Va., has returned from a fishing trip to Virgina, and although he reports fishing good, he refuses to divulge the number or size of the fish caught.

* * *

H. L. McReynolds, traffic and sales manager of the White Eagle Oil & Refining Co., Kansas City, Mo., has returned from the Panhandle where he looked after the company's new loading racks.

* * *

A. D. Gaston, assistant chief engineer of the refining department of Louisiana Oil Refining Corp., Shreveport, La., is vacationing at Sarnia, Canada. H. R. Smith has been in charge during Mr. Gaston's absence.

* * *

E. C. Marshall, general superintendent of refineries, has returned from a visit to the Casper, Wyo., Fort Worth, Tex. and Augusta, Kan. plants of the White Eagle company.

* * *

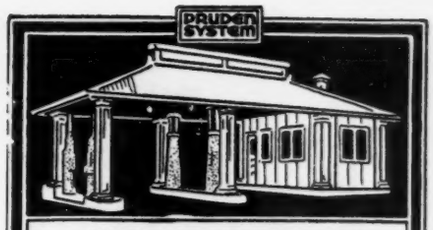
Alcibiades Leguia, formerly chemist of Freedom Oil Works Co., Freedom, Pa., is now chemist for Jones & Laughlin Steel Corp., Woodlawn, Pa.

* * *

A. T. Scherer, buyer for the Sinclair Oil & Gas Co., left Thursday for Chicago where he will spend his vacation.

* * *

R. R. Irwin, vice-president, spent the week of Aug. 16 at Wichita, Kans. looking after the company's interests.



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They are beautiful in appearance, and thoroughly practical. They can be quickly erected, enabling you to be doing business in them long before another type of station could be completed.
They are portable. A Pruden System building can serve you on many different locations during its long lifetime. Put one up wherever business is good; then move it, whenever you like, to where business would be better.
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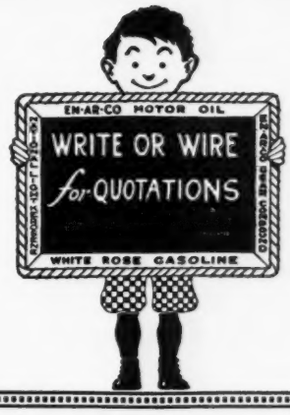

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operated on Ohio Crude
Coffeyville, Kansas Refinery
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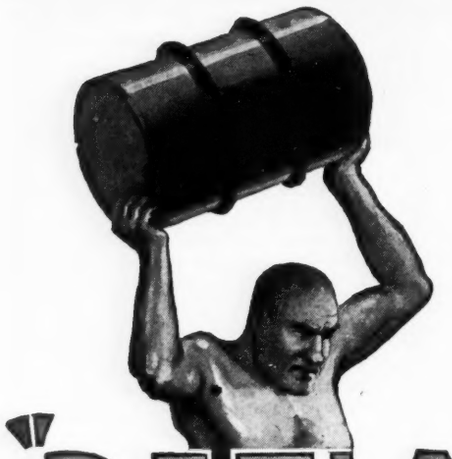

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New Oil Station Construction

Fort Wayne, Ind. — Republic Petroleum Co. building service station here. 100% pure Pennsylvania oil will be handled, according to F. V. Ruppert, owner. It will be known as the Tower Service Station and will be equipped with four pumps.

* * *

Falconer, N. Y. — Several lots have been purchased here by the Standard Oil Co. of New York, it is reported, and a service station will be erected soon.

* * *

Minneapolis, Minn. — A three-story building at Harmon and 13th St. will be erected here by Standard Oil Co. of Indiana.

* * *

Fairbury, Neb.—J. S. Bell, formerly agent for the Standard Oil Co. of Nebraska here, will erect filling station.

* * *

LaGrande, Ore. — Fletcher Oil Co. with general offices here, is building service station at Pendleton, Ore.

* * *

Farmington, Minn. — W. C. Kadel completing filling station and will handle Pure Oil gasoline.

* * *

Newton Falls, O.—The Great Western Oil Co., Cleveland, plans erection of service station here.

* * *

Helena, Ark. — Magnolia Petroleum Co. plans to build two filling stations here, it is reported.

* * *

Fort Dodge, Ia.—John T. Gleason, 1004 Sixth Ave., is seeking permit for service station.

* * *

Carroll, Ia.—Nick Beiter and M. M. McCullough purchased property for filling station.

* * *

Zanesville, O. — McIntyre Coal & Builders Supply Co. to build service station.

* * *

Arkansas City, Kans.—Standard Oil Co. of Indiana erecting service station.

* * *

Davenport, Ia.—Roxana Petroleum Corp. seeking permit for filling station.

* * *

Alexis, Ill.—Anderson & Anderson service station is being completed.

* * *

Davenport, Ia.—L. F. Ruhl Tire Co. purchased site for filling station.

* * *

Henrietta, Tex.—Magnolia Petroleum Co. to build filling station.

* * *

New Ulm, Minn.—New Ulm Oil Co. building filling station.

* * *

Wilmont, Minn.—Nobles County Co. Operative Oil Co., recently organized,

will build filling and bulk station here. C. Martin is president and J. O. Johnson, secretary and treasurer.

* * *

Ottumwa, Ia. — Two filling stations will be built here, one by Wapello Oil Co., and the other by J. M. Smith.

* * *

Sleepy Eye, Minn.—New Ulm Oil Co. will build old Dutch windmill type of service station here.

* * *

Houghton, Mich.—Standard Oil Co. of Indiana building service station at Lake Linden.

* * *

Iowa City, Ia.—Bulk station will be built here by Roxana Petroleum Corp., St. Louis.

* * *

Joplin, Mo.—A service and bulk station is being erected here by W. P. Bagby.

* * *

De Pere, Wis.—Winona Oil Co., Winona, Minn., seeks permit for filling station.

* * *

Vandalia, Mo.—J. E. Ryan, of the Ryan Oil Co., will erect filling station.

* * *

Wichita, Kan. — The Texas Co. is building several service stations here.

* * *

Boston, Mass.—Standard Oil Co. of New York to build service station.

* * *

Ada, Minn. — Filling station being completed here by Home Oil Co.

* * *

Naperville, Ill.—Standard Oil Co. of Indiana building service station.

* * *

Mantorville, Minn.—Albert Roth, St. Paul, to build filling station.

* * *

Brinkley, Ark. — Magnolia Petroleum Co. to build service station.

* * *

Spring Green, Wis.—Perfect Oil Co. completing filling station.

* * *

Neodesha, Kans.—Glen P. Stotts building filling station.

* * *

Slater, Mo.—Moberly Oil Co. leases site for filling station.

* * *

Decatur, Ill.—Standard Oil Co. of Indiana to build garage.

* * *

Balaton, Minn.—Standard Oil Co. to erect service station.

* * *

Fort Smith, Ark.—C. M. Harrison to build filling station.

* * *

Bantry, N. D.—Sam Taylor completing service station.

* * *

Nowata, Okla.—E. Lane is completing filling station.

* * *

Edmore, N. D.—T. H. Woldy to erect service station.

* * *

Buffalo, N. Y.—Larkin Co. building filling station.

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Philadelphia Dallas

Industrial Notes

Quigley Furnace Specialties Co. of New York announce that the Eagle Oil & Supply Co., Boston, has been appointed distributor covering eastern Massachusetts and Rhode Island for all Quigley products, including Hytempite, Acid-proof cement, Quigley refractory gun and Triple-A protective solutions and so on, which will be carried in stock.

* * *

The Graver Corp., East Chicago, Ind., has announced the sale of three units of the Schulze vacuum process for shipment to Japan. The Schulze process is for manufacturing lubricants. All three units will be installed by the Ogura Oil Co., at Yokohama where a Jenkins cracking unit recently was placed in operation. The American representatives of the Ogura are the Asano Bussan Co., of New York.

Two other 1000-barrel Jenkins cracking units are being turned out at the Graver plant in East Chicago now. One is for the Golden Rule Refining Co., for installation at the Wichita, Kan., plant. The other is for the Garber Refining Co. Installation has started already at the Garber, Okla., refinery.

* * *

The Springfield Boiler Co., Springfield, Ill., has perfected a peep-hole door for boiler furnaces and stills. It consists of a square plate with a five inch round opening and a revolving shutter with three positions. In closed position, it completely closes the opening. In inspection position, a special colored glass is placed over the opening to permit inspection without glare or heat, and in open position, insertion of steam lance or slice bar can be made.

Industrial Catalogues

Hill Hubbell & Co., San Francisco, manufacturers of paints and varnishes has put out a very attractive booklet on aluminum paints in which it specializes, under the title, "77 Questions and Answers on Aluminum Paints and Metal Primers." The book contains valuable information on aluminum paints under such chapter headings as, "Why Aluminum Lasts Longest," "The Vehicle," "Mixing Aluminum Paints," "The Bitulumin Way," "Bitulumin and the Oil Industry," "Judging Price and Value," and so on.

The booklet will be sent free to anyone writing the company.

* * *

The Kerrihard Co. with factory and general offices at Red Oak, Ia., has put out an attractive booklet "Heat from Oil" in which is described the Kerrihard oil burner for domestic heating, its principles and adaptability to various kinds of heating plants.

Oil Patents Issued Recently

Refining

Crude Topping Plant.—Clarence F. Hanson, Los Angeles, and Perry Vandervort, El Segundo, Calif. Filed Dec. 29, 1922. No. 1,597,375.

Method and Apparatus for Preventing Evaporation from Storage Tanks.—Robert E. Wilson, Chicago, Ill., assignor to Standard Oil Co. of Indiana. Filed May 4, 1923. No. 1,597,399.

Method of Dehydrating Oil Emulsions.—Ralph A. Halloran, Berkeley, Calif., assignor to Standard Oil Co., San Francisco, Calif. Filed June 11, 1925. No. 1,597,461.

Oil Coking Still.—Jens O. Jenson, Baltimore, Md. Filed Jan. 20, 1921. No. 1,597,469.

Apparatus for Distilling and Cracking Crude Petroleum and Distillate.—Carl M. Page, Chicago, Ill., assignor to George Fabyan, Geneva, Ill. Filed Aug. 26, 1920. No. 1,597,476.

Spraying Apparatus.—Fred C. Fantz, Port Arthur, Tex., assignor to The Texas Co., New York, N. Y. Filed Nov. 24, 1920. No. 1,597,518.

Production

Derrick.—Clark E. Ranney, Tulsa, Okla. Filed Dec. 24, 1925. No. 1,596,945.

Derrick.—Clark E. Ranney, Tulsa, Okla. Filed Dec. 24, 1925. No. 1,596,946.

Combined Packing Gland and Clamp for Polish Rods.—Thomas Hardy Eubanks, Mexia, Tex. Filed May 15, 1926. No. 1,597,071.

Pump.—George E. McCracken, Long Beach, Calif. Filed Apr. 5, 1923. No. 1,597,088.

Expansive and Contractive Deep-Well Drive.—Oscar Martin Carter, Houston, Tex. Filed July 6, 1922. No. 1,597,143.

Deep-Well Pump.—Lewis M. Kellogg, Arthur G. Gage, and Charles H. McWilliams, Los Angeles, Calif. Filed Nov. 15, 1924. No. 1,597,161.

Valve Head for Oil-Operated Well Pumps.—Lewis M. Kellogg, Arthur G. Gage, and Charles H. McWilliams, Los Angeles, Calif., assignors to Alta Vista Hydraulic Co., Los Angeles, Calif. Filed Dec. 26, 1924. No. 1,597,162.

Means for Cleaning Oil and Gas Wells.—Frank E. Crotto, Tulsa, Okla. Filed May 12, 1925. No. 1,597,180.

Casing Roller.—Arthur F. Spengler, Los Angeles, Calif. Filed Oct. 13, 1924. No. 1,597,212.

Polish-Rod Connection.—Sumner B. Sargent, Los Angeles, Calif. Filed May 5, 1925. No. 1,597,294.

Oil Dehydrater and Cleanser.—Luther T. Arnold, Reward, Calif. Filed May 5, 1925. No. 1,597,337.

Internal-Combustion Engine.—Oswald H. Hansen, Port Washington, Wis. Filed Aug. 28, 1920. No. 1,597,359.

Separator.—Daniel Edward Quick, Taft, Calif. Filed Dec. 16, 1925. No. 1,597,480.

Well-Drilling Apparatus.—Louis H. Wellensiek, Houston, Tex. Filed Oct. 19, 1920. No. 1,597,559.

Miscellaneous

System of Concentrating Sulphuric Acid.—Arthur A. Vineyard, Woodriver, Ill. Filed Sept. 9, 1925. No. 1,596,907.

Liquid Seal for Floating Roofs.—Charles F. H. Bonnhardt, Long Beach, Calif., assignor of one-half to Joseph R. Bacil, Long Beach, Calif. Filed Nov. 25, 1925. No. 1,597,046.

Machine for Producing Lubricants.—Nathaniel L. McGuire, St. Louis, Mo. Filed Oct. 16, 1924. No. 1,597,089.

Process and Apparatus for Manufacture of Carbon-Black Unsaturated Gases and Hydrogen.—Jay J. Jakowsky, Los Angeles, Calif. Filed Nov. 10, 1922. No. 1,597,277.

Made As Carefully As Perfume Bottles

Our sample oil bottles are made by the same men, of the same material and in the same plant where our fancy hand-blown perfume bottles are produced.

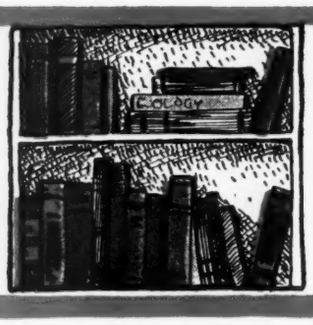
Sample oil bottles, like perfume bottles, are more than mere containers. They are salesmen. They must add attractiveness to your product and they must provide a perfect medium for accurate inspection of your sample.

Clear flint glass, handsome squared shoulders and ground or polished bottoms, as desired, give to our sample oil bottles those qualities that mean added sales for users. Available in 2, 4 and 8 ounce sizes.

Illinois Glass Company

Established 1873

ALTON ILLINOIS



Oil Man's Bookshelf

A successful department head remarked the other day:

> **"I find it necessary to keep up a constant program for *self improvement* in order to prevent my becoming obsolete so far as my value to my company is concerned."**

And to the study of the best books on his work, he attributed a good share of his advancement.

The OIL MAN'S BOOKSHELF will help you select books on oil that you can read with the greatest profit. If you do not find the subject you are interested in below, write us.

ACCOUNTING for the PETROLEUM INDUSTRY

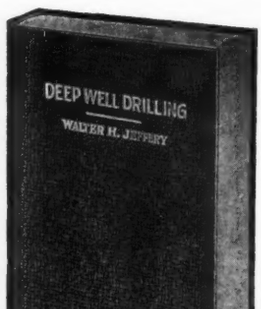
"Accounting for the Petroleum Industry" by D. F. Morland and R. W. McKee, is one of the most practical and comprehensive works on accounting principles and procedure for all branches of the oil industry — production, transportation and storage, refining, marketing.

Accounting for each branch is discussed separately; description of technical practices is given, and the accounting problem to be solved in each activity is set forth together with sample forms in use; tables for depreciation rates, etc.

For refinery accounting this book recommends the "weighted selling ratio method" which is described in detail and which has the advantage of determining for every product a cost which will allow for a reasonable profit when disposition is made thereof.

"Accounting for the Petroleum Industry" is carefully prepared and the most practical book written on the subject of accounting for the oil business.

304 pages—Price $4.00



The second edition of "Deep Well Drilling" by Walter H. Jeffery is just out. The material in the first edition has been rewritten thruout with several new chapters on improvements in the art of drilling.

"Deep Well Drilling" discusses exhaustively cable tool drilling, rotary drilling, core drilling in all their phases; tells how to fish for lost tools; how to case, how to use packers, how to cement and how to shoot; how to plan operations intelligently; specify material, etc.

Every man engaged in the production of oil should have a copy.
648 pages, illustrated, price $6.00.

RECOVERY of GASOLINE from NATURAL GAS

A glance over a few of the chapter headings indicates how thoroughly the author, George A. Burrell, goes into the subject of "Recovery of Gasoline from Natural Gas" in his new book:

Occurrence of gasoline in natural gas—Applying "vacuum" to wells —Gas leases—Chemistry and analysis of natural gas—Testing for gasoline content—Measuring—Gas carrying capacity of pipe lines—Compression method—Absorption process—Charcoal process — Extraction from Residue gas—Blending—Fractionating columns — Depletion—Removal of Hydrogen-Sulfide—Sulfur—Relation between vapor tension and distillation loss — Shipping losses — Gasoline loading apparatus — Insulating gasoline storage tanks—Accidents in transporting—Hazards in gasoline plants—Gas engines and compressors—Horse power required to compress — Steam boilers — Steam engine — Pumps used in gasoline recovery—Water cooling systems — Pipe for natural gas plants—Tanks—Regulators, relief valves, traps, thermostats, meters —Construction and operating costs of plants—Fuel economy—Depletion of properties—Other motor fuels than gasoline—Testing gasoline—etc.
590 pages, 210 illustrations, price $7

Cut out and mail

National Petroleum News,
865 Caxton Bldg., Cleveland, Ohio.

I want the books checked below. Enclosed is check or money order for $_____

- ☐ ***Accounting for the Petroleum Industry*** **by R. W. McKee $4.**
- ☐ ***Deep Well Drilling*** **by W. H. Jeffery $6.00.**
- ☐ ***Recovery of Gasoline from Natural Gas*** **by G. A. Burrell $7.**

NAME _____

Address _____

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ON THE LAZY BENCH

National Petroleum News

High School Horse

Hi: I sent a dollar to a firm for a cure for my horse that slobbers.

Si: What did you get?

Hi: A slip of paper on which was written: Teach Him to Spit.

—The Marion Line

◈ ◈ ◈

Struck Out

Magistrate—"Did you or did you not strike the policeman?"

Prisoner—"The answer is in the infirmary."

—The Marion Line

◈ ◈ ◈

"Does your father keep the ten commandments?" asked the Sunday school teacher.

"I'm not sure," replied little Otto, "but I'm afraid it is all he can do to keep up with the traffic regulations."

—Magnolia Oil News

◈ ◈ ◈

A Bitter Dose

"Well, young man, I'll soon have you on your feet again."

"You're right, doctor, I'll have to sell my automobile to pay your bill."

—The Marion Line

◈ ◈ ◈

Traffic Cop: "Come on! What's the matter with you?"

Truck Driver: "I'm well, thanks; but me engine's dead."

—The Atlantic Seal

◈ ◈ ◈

Tell Me

He—"Have you heard the new hotel song?"

She—"No, what is it?"

He—"Ho-tel me pretty maiden."

—The Marion Line

◈ ◈ ◈

It's a Long, Long Way, Etc.

Drunk: Shay, mishter, how far is hit to the stashion?"

Stranger: About twenty minutes' walk.

Drunk: Hic, twenty minutes for you or for me?"

—The Marion Line

◈ ◈ ◈

Ike: "Your neck reminds me of a typewriter."

Mike: "How's that?"

Ike: "Underwood."

—The Atlantic Seal

One Way to Build Up Business

NOTICE
TO ALL SALESMEN!

Before any interview is given by the management to any solicitors, salesmen or salesman it will be necessary for you to fill your car with gasoline and oil.

Courtesy will then be gladly given on 100% basis.

Jacox Bros. Oil Company
By G. P. Jacox

A Whale of an Answer

Teacher:—"Give me a sentence using the word vicious."

Little Johnnie:—"Oh ye gods and little vicious."

—The Marion Line

◈ ◈ ◈

Ditched After A Fashion

Customer—"And you say you lost control of your car?"

Chief Clerk—"Yes. I couldn't keep up the installments."

—Independent Topics

◈ ◈ ◈

Round About

"Just saw two fellows fighting down the street."

"What was it about?"

"Yeah, a bout."

—The Marion Line

◈ ◈ ◈

Stranger: "Are you sure it was a marriage license you gave me last month?"

Clerk: "Certainly, sir, why?"

Stranger: "Because I've been leading a dog's life ever since."

—Magnolia Oil News

◈ ◈ ◈

Fond Mother: "Yes, Genevieve is studying French and Algebra. Say 'Good Morning' to the lady in Algebra, Genevieve."

—Magnolia Oil News

◈ ◈ ◈

"Count that day lost
Whose ambient air
Brings not another
Questionnaire."

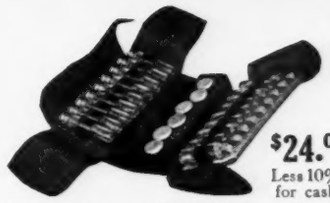
—Exchange

◈ ◈ ◈

There may be no real saturation point in the automobile market, but it has been seen in some drivers.

—Union Oil Bulletin

ALL-IN-1 FOLIO



$24.00
Less 10% for cash

Closed, 301 is a handsome Portfolio of selected, 5 oz., black cowhide. Open however, it is an efficient, attractive Display Case, containing 18 four ounce cut-bottom bottles with metal capped corks, and 6 one ounce squat grease jars. There are no trays to lift out, no metal clips to break the bottles. The flaps are lined with washable Keratol, and the samples backed against red plush. There is also an ample pocket for order book and literature. Satisfaction is guaranteed. Your name embossed in gold *free*.

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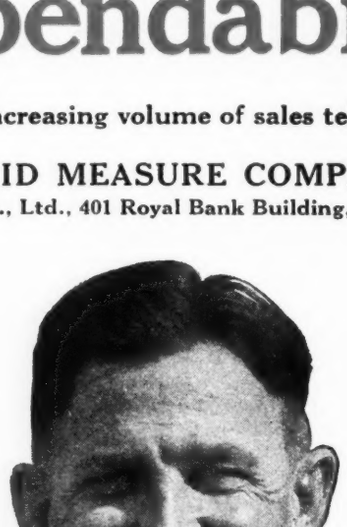
Fry Visible Pump

More and more are large and small service station owners standardizing on the Fry Visible Pump. This ever-increasing popularity is due to one outstanding quality—Fry

Dependability

Fry's ever increasing volume of sales tells the story

GUARANTEE LIQUID MEASURE COMPANY, Rochester, Pa.
Fry Equipment Co., Ltd., 401 Royal Bank Building, Toronto, Ontario



Jimmy—the Courtesy Man

Refinery - Tank Wagon Markets

National Petroleum News

More Active Buying Stimulates Gasoline Markets in Mid-Continent

Staff Special
TULSA, Sept. 4

SUPPORTED by a good volume of buying the Mid-Continent refinery markets with only one or two commodities excepted moved fractionally higher in prices this week. Gasolines advanced from an eighth to a half a cent per gallon, natural gasolines did likewise, and fuel oils went from 2½ to 5 cents a barrel above the prices prevailing at the close of the previous week.

A more optimistic feeling has developed as a result of the recent pickup in general buying. Refiners almost without exception report that shipments have been as good if not better than for the week ending Aug. 27, when refinery operations reports from 60 per cent of the field showed movement of gasolines from refineries had gone over 37,000,000 gallons again after a slump to around 35,000,000 gallons for the third week in August. Several refiners were so well sold up late this week that they advanced their quotations a quarter of a cent above the going market.

U. S. Motor Price Advances

AT the beginning of the week 58-60 U. S. Motor was available in Oklahoma markets at 10¾ cents per gallon, but after two days of good buying refiners who had been offering material at this price almost without exception moved up to 11 cents, while others advanced their prices from 11 cents to 11¼ cents.

Refiners in north Texas received business in sufficient volume to prevent any distress material prices being sent out. In north Louisiana refiners who have been pushing their gasolines heavily in the northern and eastern territory in competition with Group 3 and other areas, were reported to have sufficient orders to hold their own markets in line. Practically the same condition prevailed in Arkansas although movement was probably slower. Kansas apparently was the most sluggish spot with refiners getting only a fair volume of business the first of the week. Orders increased late in the week, however, and prices were steady today.

Natural gasoline manufacturers received enough inquiries and orders this week to keep their production moving. Several were reported to be practically sold up and higher prices were a natural result with material as tight as it is at the present time.

The generally better business conditions were not limited to the refiners and natural gasoline manufacturers. Several jobber and marketing company representatives in Tulsa said they had had a good volume of business. One representative, however, said his firm's business on gasolines was still limited to the territory west of the Mississippi river, since material was still being pushed as far westward as possible from the Atlantic seaboard and from Ohio and Pennsylvania refineries.

Expect Heavy Holiday Business

A GOOD portion of this week's buying has been to replenish stocks after the anticipated heavy consumption of gasolines over the holidays. Jobbers have been buying from hand to mouth so long that many of them have let their storage get extremely low, reports from refinery salesmen in the consuming territory would indicate. With favorable weather over the week end gasoline consumption will be unusually large, and the jobber with little gasoline on hand is not taking a chance of getting caught short next week. He has been ordering his material ahead sufficiently to have it on hand as soon as possible after Tuesday.

Several fair sized inquiries for gasoline were received by Oklahoma refiners early in the week. It is doubtful, however, if any quantity of material has been sold for over the month at a flat price.

With this situation prevailing refiners believe next week will be the key week for September. If jobbers continue to buy actively after the Labor Day refiners likely will take that as an indication of a generally good month. Many believe prices will average considerably higher for September, their opinions being based primarily on the action of the market last year.

There has been a noticeable pickup in the domestic demand for high gravity gasolines. With September already here there will be chilly mornings soon in some of the consuming territory, and the higher gravity gasolines will be sought by automobile drivers who want to hear their motors fire at the first turn of the starter.

One refiner making considerable 60-62, 400 end point gasoline has been practically sold up all week, he reports. Another refiner who makes only a small quantity of 64-66, 375 e. p. gasoline has suddenly found his jobbers demanding this grade of material in such quantity that he has had to buy on the outside to cover on orders.

A north Texas refiner who has continued to make higher gravity gasolines this summer despite the lack of export buying, and who consequently has sold some material at unusually low prices in comparison with U. S. Motor, reports he has had a good business on 64-66, 375 e. p. gasolines and has consequently advanced his price to around the level of other refiners who have not been so hard pressed for orders.

Naturals Still Strong

REFINERS in this territory have been in the habit of working up their heavy gasoline ends late in the summer and consequently have required considerable natural gasolines for blending. This working over of stock has been in progress for the past few weeks and a good bit of the strength being shown by naturals is attributed to buying by refiners.

Orders from the northern and eastern territory, meanwhile, have been fairly numerous although the number of cars in each order has not been large.

Natural gasoline manufacturers are counting on the jobber demand for a higher gravity gasoline this winter to stimulate refiner buying of their products. Refiners who also have natural gasoline production are planning to use their naturals for blending with their usual U. S. Motor stock in order to produce a higher gravity gasoline. This will give the jobber a higher grade of motor fuel for winter use, and at the same time give the refiner a place to put his naturals. One refiner is preparing to offer a blend of naturals and U. S. Motor at a slight differential over his straight U. S. Motor grade, and already has contracted with one or two customers to supply most of their winter requirements. Most of the so-called blends heretofore have been made from the raw naphtha and casinghead gasoline.

(Continued on page 93)

Youngstown TANKS

From Well to Market

The chain is no stronger than its weakest link

FORGE a stronger chain by eliminating the weak links. No matter whether you are a producer, a refiner, jobber, or a retailer of oil, or a manufacturer or agent for oil burning equipment you are vitally interested in *better steel storage tanks.*

Write for full copy of Bulletin 500.

The YOUNGSTOWN BOILER & TANK Company
Youngstown Ohio · · U.S.A.

Refinery Markets on Light Oils and Lubricants

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas, California

GASOLINE AND NAPHTHA

PENNSYLVANIA	Prices Sept. 7	Prices Aug. 30	Prices Aug. 23
52-54 Naphtha	12¾-13	13 -13¼	12¾-13
54-56 Naphtha	13 -13¼	13¼-13½	13 -13¼
58-60 Gasoline	13¼-13½	13¼-13¾	13½-13¾
60-62 Straight-run gasoline	14 -14¼	13¾-14½	14 -14½
64-66 Straight-run gasoline	14½-15	14½-15	14½-15
68-70 Straight-run gas. 350-360 E.P.	15 -15½	15¼-15½	15¼-15½
68-70 Straight-run gas. 305-320 E.P.	19 -20	19 -20	19 -20
OKLAHOMA			
48-50 450 E. P. naphtha	-10¾	-10¾	-10¾
50-52 450 E. P. naphtha	-10¾	-10¾	-10¾
56-58 450 E. P. gasoline	10¾-10⅞	10¾-10¾	10½-10⅝
56-58 U. S. Motor gasoline	10⅞-11	-10¾	-10⅝
58-60 450 E. P. gasoline	10¾-10⅞	10½-10¾	10½-10⅝
58-60 U. S. Motor 487 E. P.	11 -11¼	10¾-11	10⅝-11
60-62 400 E. P. gasoline	11½-11¾	11¼-11½	11¾-11½
64-66 390 E. P. gasoline	*11⅝-11¾	*11¼-11¾	*11½-11⅝
64-66 375 E. P. gasoline	11⅞-12	*11¾-12	*11⅝-11¾
68-70 350-360 E. P. gasoline	12 -12⅛	12 -12¼	12 -12¼
64-66 487 E. P. blend	10½-10¾	-10½	-10½
KANSAS*			
58-60 U. S. Motor gasoline	-11½	11¾-11½	11¾-11½
*F. O. B. refinery Kansas destination.			
NORTH TEXAS			
48-50 450 E. P. naphtha	-10¾	-10¾	-10¾
56-58 450 E. P. gasoline	10⅜-10⅝	10⅜-10½	10¼-10⅜
58-60 450 E. P. gasoline	10½-10¾	10½-10⅝	-10½
56-58 U. S. Motor gasoline	-10¾	-10¾	10½-10⅝
58-60 U. S. Motor gasoline	10¾-11	-10¾	10½-10¾
64-66 390 E. P. gasoline	* -11½	* -11¼	* 11¼
64-66 375 E. P. gasoline	*11½-11¾	*11⅜-11½	11⅜-11½
68-70 350-360 E. P. gasoline	12 -12⅛	12 -12¼	12 -12¼
NORTH LOUISIANA			
58-60 U. S. Motor 487 E. P.	11 -11¼	10¾-11	11 -11¼
ARKANSAS			
58-60 450 E. P. gasoline	11⅜-11¼	10½-10¾	-10¾
58-60 U. S. Motor gasoline	11¼-11½	10⅞-11	10⅞-11⅛
CALIFORNIA			
*54-58 U. S. Motor 437, E.P.	12 -12½	12 -12½	12 -12½
*58-61 U. S. Motor, 437 E.P.	-13	-13	-13
42-45 Engine distillate, 445-480 E.P.	9¼-10	9¼-10	9¼-10

*This is without the 2-cent state tax included in the price of California refiners for shipments within the state.

NEW ENGLAND (F. O. B. Boston and Fall River)			
58-60 U. S. Motor gasoline	-13	-12⅝	-12⅞

NATURAL GASOLINE

(Note: End point of all grades, not over 375° F.)

OKLAHOMA			
Grade Double A	10¼-10½	-10	- 9¾
Grade A	10¼-10½	-10	- 9¾
Grade Double B	10 -10⅛	- 9¾	9½- 9¾
Grade B	10 -10⅛	- 9¾	9½- 9¾
Grade C	-10	- 9¾	- 9½

NOTE—Specifications adopted by Ass'n. of Nat. Gaso. Manufacturers
Grade Double A—80-87.9 gravity, 90% recovery, not over 375 E. P.
Grade A—72-79.9 gravity, 90% recovery, not over 375 E. P.
Grade Double B—84-92 gravity, 85% recovery, not over 375 E. P.
Grade B—76-83.9 gravity, 85% recovery, not over 375 E. P.
Grade C—80-90 gravity, 78% recovery, not over 375 E. P.

NORTH LOUISIANA			
*Grade Double A	10½-10¾	-10½	10¼-10½
*Grade Double B	-10½	-10½	10 -10¼
*Grade C	-10½	-10½	9¾-10
*F. O. B. Monroe District.			

NORTH TEXAS			
*Grade Double A	10¼-10⅜	-10	- 9¾
*Grade A	10¼-10⅜	-10	- 9¾
*Grade Double B	10 -10⅛	- 9¾	9½- 9⅝
*Grade B	10 -10⅛	- 9¾	9½- 9⅝
*Grade C	-10	- 9¾	- 9½
*F. O. B. Breckenridge.			
CALIFORNIA			
75-85° 375-390 E. P.	15½-16	15½-16	15½-16
PENNSYLVANIA			
68-70 Grav. 437 E. P.	13½-14	13½-14	13½-14
64-66 Grav. 437 E. P.	13½-14	13½-14	13½-14
60-62 Grav. 437 E. P.	13½-14	13½-14	13¾-14
68-70 Grav. 420 E. P.	13¾-14¼	13¾-14¼	13¾-14¼

BURNING OILS

PENNSYLVANIA			
45 Water White Kerosene	-10¾	10½-10¾	-10¼
46 Water White Kerosene	-11¼	10¾-11	10½-10¾
47 Water White Kerosene	-11¾	11¼-11¾	11 -11¼
OKLAHOMA			
41-43 Water White Kerosene	- 9½	- 9½	8¾- 9
42-44 Water White Kerosene	* -10	* -10	* - 9½
KANSAS			
41-43 w. w. kerosene	- 9¾	- 9¾	* - 9¾
42-44 w. w. kerosene	10¼-10½	10¼-10½	10 -10¼
†Quotations only, no sales recorded.			
*Prices nominal			

NORTH TEXAS	Prices Sept. 7	Prices Aug. 30	Prices Aug. 23
41-43 Water White Kerosene	9⅜- 9¾	9 - 9¾	8½- 8¾
NORTH LOUISIANA			
41-43 Water White Kerosene	9½-10	*9¾-10	*9¾- 9¾
ARKANSAS			
41-43 Water White Kerosene	9¾- 9½	9¾- 9¾	- 8½
CALIFORNIA			
38-40 Water White Kerosene	7½- 8	7½- 8	7½- 8
NEW ENGLAND			
**40-43 Water White Kerosene	-11	-10¾	-10½

NEUTRAL OIL

PENNSYLVANIA (Viscosity at 70° F.)			
200 Vis. No. 3 Assoc. Filt	28½-29	28½-29	28½-29
180 Vis. No. 3 Assoc. Filt	26 -26½	26 -26½	26 -26½
150 Vis. No. 3 Assoc. Filt	23 -24	23 -24	23 -24
(Non-Viscous)			
34 Grav. 350-360 Flash	8 - 8½	7¾- 8	7¾- 8½
36 Miners Neutrals 300-305 Flash	7½- 7¾	7½- 7¾	7½- 7¾
OKLAHOMA (Viscosity at 100° F.)			
100 Vis. No. 2 color	7 - 7½	7 - 7½	7- 7½
150 Vis. No. 3 color	9¼-10	9¼-10	9 -10
150 Vis. No. 4 color	- 9¾	- 9¾	- 9¾
180 Vis. No. 3 color	10½-11½	10½-11½	10½-11½
180 Vis. No. 4 color	10 -10½	10 -10½	9¾-10½
180 Vis. No. 5 color	10 -10¾	10 -10¼	10 -10¼
200 Vis. No. 3 color	11 -12½	11 -12½	11 -12½
200 Vis. No. 4 color	-11¾	-11½	-11½
200 Vis. No. 5 color	9¾-11¼	9¾-11¼	9¾-11¼
220 Vis. No. 3 color	12 -13½	12 -13½	12 -13½
220 Vis. No. 4 color	-13	-13	-13
220 Vis. No. 5 color	12 -12¾	12 -12¾	12 -12¾
240 Vis. No. 3 color	14 -15	14 -15	14 -15
240 Vis. No. 4 color	-14½	-14½	-14½
240 Vis. No. 5 color	13 -14	13 -14	13 -14
280 Vis. No. 3 color	16 -17	16 -17	16 -17
280 Vis. No. 4 color	-16½	-16½	-16½
280 Vis. No. 5 color	15 -16	15 -16	15 -16
300 Vis. No. 5-6 color	-17	-17	-17
GULF COASTAL (Viscosity at 100° F; cold test 0)			
100 Vis. No. 2 Color Unfilt. Pale	8½- 9	8½- 9	8 - 8½
200 Vis. No. 3 Color Unfilt. Pale	11½-12	11½-12	11½-12
300 Vis. No. 3 Color Unfilt. Pale	12½-13	12½-13	12½-13
500 Vis. No. 3½ Color Unfilt. Pale	14 -14½	14½-15	14½-15
750 Vis. No. 4 Color Unfilt. Pale	17½-18	17½-18	17½-18
200 Vis. No. 5½ Color Red Oil	10 -10½	10 -10½	9½-10
300 Vis. No. 5½ Color Red Oil	11½-12	11¾-12	11¼-12
500 Vis. No. 6 Color Red Oil	12½-13	12½-13	12½-13
750 Vis. No. 6 Color Red Oil	16½-17	16½-17	16 -16½
CALIFORNIA (Viscosity at 100° F.)			
100 Vis. No. 2 color	11 -11½	11 -11½	11 -11½
100 Vis. No. 3 color	8½- 9	8½- 9	8½- 9
200 Vis. No. 3 color	13½-14	13½-14	13½-14
300 Vis. No. 3 color	15 -15½	15 -15½	15 -15½
450 Vis. No. 3½ color	18 -18½	18 -18½	18 -18½
550 Vis. No. 3 color	20 -21	20 -21	20 -21
600 Vis. No. 3½ color	21 -22	21 -22	21 -22
100 Vis. No. 5 color	7 - 7½	7 - 7½	7 - 7½
200 Vis. No. 5 color	12 -12½	12 -12½	12 -12½
300 Vis. No. 5 color	13 -13½	13 -13½	13 -13½
400 Vis. No. 5 color	15 -16	15 -16	15 -16
500 Vis. No. 5 color	16 -17	16 -17	16 -17
600 Vis. No. 6 color	17 -18	17 -18	17 -18
700 Vis. No. 7 color	18 -19	18 -19	18 -19

CYLINDER STOCKS

OKLAHOMA			
190-200 Vis. at 210° Bright Stock	31 -35	31 -35	31 -35
150-160 Vis. at 210° Bright Stock	28½-31	28½-31	28½-31
600 E Stock, 140-150 Vis. — 210°	-18	-18	-18
600 Steam Refined Olive Green	8 -11	8 -11	8 -11
600 Steam Refined Dark Green	6 - 8	6 - 8	6 - 8
Black Oil	5 - 6	5 - 6	5 - 6

PENNSYLVANIA (1-inch Immersion Test)			
600 Steam Refined	12½-13½	13 -13½	14 -14½
650 Steam Refined	17½-18½	18 -18½	19 -19½
600 Flash	21 -22	21 -22	22½-23
625 Flash	-32	32 -33	32½-33
600 Warren E	-21	20½-21	20½-21
600 Oil City E	-20	-19½	-19
600 D Filtered	-26¾	-26½	26¾-26½
Cold Test Stocks (bright filtered)	41 -42	41 -42	41 -42
Cold Test Stock (dark filtered)	39 -40	39 -40	39 -40

(Note—Prices of total immersion test goods average 1 to 3 cents per gallon higher.)

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

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Other equipment on which you may send prices.....

Name..... Address.....

Refinery Markets on Wax and Heavy Oil Products

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas, California

WAX

PENNSYLVANIA	Prices Sept. 7	Prices Aug. 30	Prices Aug. 23
	(Per Pound, New York)		
122-124 White Crude Scale..	– 5¼	5⅛– 5¼	5⅛– 5¼
124-126 White Crude Scale..	– 5⅜	5¼– 5⅜	5¼– 5⅜
OKLAHOMA	(Per Pound, Group 3)		
124-126 White Crude Scale..	– 4¾	– 4¾	– 4¾
CALIFORNIA			
White Crude Scale.....	6 – 7	6 – 7	6 – 7

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil.....	6½– 6¾	6⅜– 6⅝	6 – 6½
30-34 Fuel Oil.....	5¾– 6	5¾– 5⅞	– 5¾
28-30 Fuel Oil.....	5¾– 6	5⅝– 5¾	5½– 5⅝
OKLAHOMA			
38-40 Straw distillate.....	5½– 5¾	5½– 5¾	5⅜– 5⅝
36-38 Straw distillate.....	5¼– 5½	5¼– 5½	5⅛– 5⅜
32-36 Gas oil, cracked (Gal.)	4⅝– 4¼	4⅛– 4¼	4⅛– 4¼
32-36 Gas oil, uncracked (Gal.)	4¼– 4⅜	4¼– 4⅜	4¼– 4⅜
26-30 Fuel oil (Bbl.).....	1.60 –1.65	1.60 –1.65	1.55 –1.60
24-26 Fuel oil (Bbl.).....	1.45 –1.50	1.42½–1.47½	1.40 –1.45
22-26 Fuel oil (Bbl.).....	1.40 –1.45	1.37½–1.42½	1.37½–1.40
18-22 Fuel oil (Bbl.).....	1.35 –1.40	1.35 –1.37½	1.32½–1.35
14-18 Fuel oil (Bbl.).....	1.32½–1.35	1.30 –1.35	1.27½–1.30
KANSAS*			
38-40 Light straw distillate..	5⅞– 6	5¾– 6	– 5¾
36-38 Light straw distillate..	5⅝– 5¾	5½– 5¾	5⅜– 5½
32-36 Gas Oil.....	4½– 4⅝	4½– 4⅝	4½– 4⅝
18-22 Fuel Oil.....	1.40 –1.45	1.40 –1.45	1.40 –1.45
24-26 Fuel Oil.....	1.55 –1.65	1.55 –1.65	1.55 –1.65
*F. O. B. refinery, Kansas destination.			
NORTH TEXAS			
38-40 Straw Distillate.....	5⅜– 5⅝	5⅜– 5⅜	5⅜– 5¼
32-36 Gas Oil (Gal.) cracked	4¼– 4⅜	4¼– 4⅜	– 4½
32-36 uncracked gas oil.....	4⅜– 4½	4⅜– 4½	– 4½
24-26 Fuel per (Bbl.).....	–1.50	1.45 –1.50	1.45 –1.50

GULF COASTAL	Prices Sept. 7	Prices Aug. 30	Prices Aug. 23
Fuel.....	1.60 –1.65	1.60 –1.65	1.60 –1.65
Gas Oil.....	5⅜– 5¾	5⅜– 5¾	5⅜– 5¾
NORTH LOUISIANA			
32-36 Light Gas Oil (Gal.)..	4¾– 5	4¾– 5	4½– 5
16-20 Fuel Oil (Bbl.).....	1.35 –1.40	1.35 –1.40	1.35 –1.40
ARKANSAS			
30-34 Gas oil.....	4¼– 4½	.....	.....
32-36 Gas Oil.....	4⅜– 4⅞	4⅜– 4⅞	4⅜– 4⅞
Smackover Crude Fuel.....	1.25 –1.30	1.25 –1.30	1.25 –1.30
Road oil.....	1.30 –1.36½	1.30 –1.36½	1.30 –1.36½
CALIFORNIA*			
14-18 Fuel Oil (Bbl.).....	1.00	1.00	1.00
14-18 Bunker Oil (Bbl.)....	1.00	1.00	1.00
24-30 Gas Oil (Bbl.).....	1.15	1.15	1.15
27 + Diesel Oil (Bbl.).....	1.15	1.15	1.15
*(San Joaquin Valley, San Francisco 4c per bbl. more.)			
NEW ENGLAND	(F. O. B. Boston and Fall River)		
30-32 Gas Oil (Gal.).....	– 6⅛	– 6⅛	– 6⅛
Fuel Oil (Bunker C) Bbl...	–1.79	–1.78	–1.82½

PETROLATUMS

PENNSYLVANIA			
Snow White.....	8½– 9	8½– 9	8½– 9
Lily White.....	7½– 8	7½– 8	7½– 8
Cream White.....	– 6½	– 6½	– 6½
Light Amber.....	– 3½	– 3½	– 3½
Amber.....	3¼– 3½	3¼– 3½	3¼– 3½
Red.....	– 3	– 3	– 3
Green #5.....	1¾– 2	1¾– 2	1¾– 2

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

(Continued from page 89)

While activity on kerosenes this week has not had the spot light position occupied in previous weeks, the movement nevertheless has been steady and there has been no indication of softness. This month and next month are expected to produce the bulk of the fall business and unless refiners show more inclination to produce kerosene than they have the past few weeks prices probably will remain fairly stable for some time.

As long as kerosenes remain around 9½ and 10 cents per gallon in Group 3, distillates are likely to be extremely scarce. Refiners are going to carefully fractionate their crude and get every gallon of kerosene possible out of their normal distillate cut since each gallon thus obtained is approximately 3¾ cents more in his pocket.

Fuel Oils Puzzling

FUEL oils are presenting a puzzling picture to many persons both in and out of the refining area. Efforts to buy material on the spot market are generally met with the statement from refiners that they are "sold up" or "not offering." Refinery operation figures, however, show that fuel oil stocks in the Mid-Continent between April 30 and Aug. 27 have increased over 38,000,000 gallons.

Although the spot market is tight and prices higher than was generally expected at this time of the year, it must be borne in mind that numerous fuel oil contracts have been made for the winter, and refiners are storing this material now for their purchasers. Refiners will naturally reduce crude runs somewhat this winter when the gasoline demand slumps, consequently less fuel will be produced. Fuel oil storages, therefore, must be built up now.

The demand for neutral stocks and cylinder oils has been better this week but prices are unchanged. Wax is easy at around 4¾ cents per pound.

Demand Active For Most Pennsylvania Oils

CLEVELAND, Sept. 7.—Gasoline has been active in western Pennsylvania refinery markets and prices of the heavier grades today were ¼ cent a gallon higher than late last week and at the same level as a week ago. Buyers report that shading has disappeared.

Refiners reported kerosene was good and prices to the trade today were uniform from the main shipping points—Oil City, Warren and Bradford. These were the prices: 45 water white 10¾ cents; 46, 11¼ cents, and 47, 11¾ cents. Fuel oil also was reported to be active.

Several refiners are sold up on viscous neutrals. Bright stocks are scarce. All plants making bright stocks are operating at practical capacity and most of them are virtually sold up. Filtered stocks are active with prices higher than those of a week ago.

Steam refined stocks are quiet and in some quarters they may be had at almost any price, buyers report. Leading refiners making 600 fire test stocks of good green color and with viscosity of 140 to 145 at 210° F., are asking 13 to 13½ cents a gallon, but one offering of a dark Buckeye stock was heard of at 11¼ cents a gallon for resale. High flash stocks are holding up.

Wax is still higher at Pennsylvania refineries than in the New York market. The general quotation for 122-124 A.m.p. white crude scale is 5¼ cents a pound, New York base, and ⅛ cent a pound more than 124-126 A.m.p. white crude scale.

Contracting Firms Merge

EL DORADO, ARK.—The National Drilling Co. and the Arkansas Drilling Co., prominent contractors, have been consolidated under the name of the latter and capital stock has been increased from $50,000 to $75,000. The new company is headed by E. M. Delk, who was president of the National company. He also is general manager of the company. J. E. Johnson is vice-president of the Arkansas Drilling Co. and C. E. Johnson is secretary and treasurer.

Gasoline Prices Higher in Chicago Kerosene Market is Steady

Staff Special

CHICAGO, Sept. 4.—Gasoline prices in the Chicago resale market moved up ¼ to ½ cent this week, reflecting improved demand from the jobbing trade. It was estimated consumption over the Labor Day week-end would be large, and jobbers accordingly have bought more freely throughout the week and on Saturday were buying for replacement after the holiday.

An exceptionally good demand has been noted for gasoline in transit; in fact so large has been the demand this week for transit goods that premiums were paid some sellers on a car or two they were able to pick up.

The advancing market began late last week when almost all the low priced gasoline offered out of north Texas and the Shreveport district was cleared out. This gasoline had been offered to resale agents in Chicago for over two weeks at sufficiently low prices to enable them to take the bulk of the spot jobbing business at approximately ¼ cent under the asking prices of most Tulsa representatives in Chicago. Most of this low priced gasoline was sold Friday and Saturday of last week. Since that time prices have increased steadily.

The market opened Monday at 11 to 11⅛ cents for 58-60 U. S. Motor gasoline. Prices today are 11⅛ to 11¼ cents with several refiners quoting 11⅜ and 11½ cents and reporting occasional sales.

The weather has not been so good. Showers throughout the middle west have made some Chicago marketers pessimistic and many factors predicted consumption over the holiday would not be as large as expected.

The weather man's forecast for next week is fairly promising; he predicts generally fair weather over most of the Chicago forecast district, with a showery period only about the middle of the week. Temperatures will average near or slightly below normal.

Prices of higher gravity gasolines have reacted to slightly better demand, advancing about ⅛ cent. The 64-66, 375 end point grade is generally held at 12 cents with the 390 end point grade at 11⅞ cents.

Kerosene prices are substantially the same as a week ago. The 41-43 water white gravity grade is held at 9⅝ to 9¾ cents; only occasional cars are available at 9½ cents. The 42-44 gravity grade is scarce at 10 to 10¼ cents.

The tank wagon advance in Ohio Friday stiffened prices in the resale market slightly. It is also reported some of the larger refiners are still buying occasional lots of kerosene for shipment to their own stations.

Distillate, gas and fuel oils are offered no more freely than in the last six weeks. Straw color distillate of 38-40 gravity is scarce at 5¾ to 6 cents; 32-36 dark gas oil is 4⅜ to 4½ cents and light color gas oil of the same gravity is nominally quoted up to 4¾ cents. Considerable 28-32 gravity gas oil with flash of around 175 and light straw color, has been bringing 4½ to 4⅝ cents.

The usual September fuel oil demand is noted. Fuel of 18-22 gravity is 2½ cents a barrel higher than a week ago at $1.37½ to $1.40, and 24-26 continues scarce at $1.47½ to $1.50. Smackover is $1.27½ to $1.30; buying prices in the field are $1.22½ to $1.25.

CLEVELAND, O.—Two tests in Pennsylvania which were started to test sands far below present productive levels in their localities have reached considerable depths. The United Natural Gas Co., drilling near Kane, is drilling at 5200 feet, having had gas showing at 5120. Near Tidioute the Fidelity Petroleum Corp. is below 4500 feet in its test.

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Week's Price Changes Tank Wagon Markets

Kerosene Changes

Standard of Ohio—Kerosene advanced 1 cent, through Ohio, to 17 cents at tank wagon, Sept. 3.

Gasoline Changes

Magnolia Petroleum—T.W. and s.s. prices gasoline cut 2 cents, Dallas and Fort Worth, to 17 cents including 1 cent state tax, **Sept. 3,** and at El Paso cut 1 cent, to 21 cents, **Sept. 1.**

* * *

Independent Cuts Buffalo Gasoline

BUFFALO, N. Y., Sept. 7.—On Sept. 4 Elmer E. Harris & Co., Independent oil jobber here, reduced tank wagon and service station prices of gasoline 2 cents at Buffalo, to 18 cents and 21 cents respectively. Standard Oil Co. of New York has not as yet met the cut.

* * *

Jenney Mfg. Cuts Boston Gasoline

BOSTON, Sept. 7.—On Sept. 3 Jenney Mfg. Co., large gasoline distributor in Boston and vicinity, reduced tank wagon and service station prices of gasoline 2 cents at Boston, to 19 cents and 21 cents respectively. Neither the Standard Oil Co. of New York nor the Atlantic Refining Co. have announced to date whether they would meet this cut.

Prairie Shipments Lower

Staff Special—by Telegraph

TULSA, Sept. 7.—Shipments of the Prairie Pipe Line Co. were lower during August than in any month since last November. Daily average shipments for August were 129,209 barrels, a reduction of 7300 barrels per day from the the daily average for July. During August a year ago the Prairie shipped 139,306 barrels a day, totaling 4,318,497 barrels. Total for the month just closed was 4,005,435 barrels.

Foreign Opportunities

Reserved information may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, and its district and cooperative offices by duly registered firms and individuals upon written request by opportunity number. The Bureau does not furnish credit ratings or assume responsibility as to the standing of foreign inquirers; the usual precautions should be taken in all cases, and where no references are offered it does not necessarily imply that satisfactory references could not be given. Correspondence may be in English unless otherwise stated.

21824.—**Automobile oils and greases,** Alexandria, Egypt, agency.

21825.—**Furnace oil,** Ottawa, Canada, purchase.

21826.—**Oil for spraying trees and roads,** Campbellton, Canada, purchase or agency.

21942.—**Neutral oils,** edible, Vigo, Spain, agency.

21962.—**Lubricating oils and greases,** Leipzig, Germany, agency.

21980.—**Gasoline and kerosene,** Naples, Italy, purchase and agency.

Tank Wagon, Service Station Markets for Gasoline and Kerosene In United States Territories and Canada

These Prices in Effect Sept. 6, 1926

S.O. NEW JERSEY TERRITORY

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Atlantic City, N. J.	19	0	19	*	17
Newark, N. J.	19	0	19	21	17
Annapolis, Md.	19	2	21	*	17
Baltimore, Md.	19	2	21	24	17
Cumberland, Md.	19	2	21	24	17
Washington, D. C.	19	2	21	24	17
Danville, Va.	19	4½	23.5	*	17
Norfolk, Va.	19	4½	23.5	26.5	17
Richmond, Va.	19	4½	23.5	26.5	17
Roanoke, Va.	19	4½	23.5	26.5	17
Petersburg, Va.	19	4½	23.5	*	17
Williamsburg, Va.	19	4½	23.5	*	17
Charleston, W. Va.	18	3½	21.5	24.5	17
Clarksburg, W. Va.	19	3½	22.5	25.5	17
Keyser, W. Va.	19	3½	22.5	*	17
Parkersburg, W. Va.	18	3½	21.5	24.5	17
Wheeling, W. Va.	18	3½	21.5	24.5	17
Charlotte, N. C.	19.5	4	23.5	26.5	17
Hickory, N. C.	19.5	4	23.5	*	17
High Point, N. C.	19.5	4	23.5	*	17
Mt. Airy, N. C.	19.5	4	23.5	*	17
Salisbury, N. C.	19.5	4	23.5	*	17
Charleston, S. C.	19.5	5	24.5	27.5	17
Columbia, S. C.	19.5	5	24.5	27.5	17

*Dealers set own prices. S O. New Jersey does not operate station.

S. O. NEW YORK

*New York City	21	0	21	25	18
Albany, N. Y.	17	0	17	19	18
Buffalo, N. Y.	20	0	20	23	18
Rochester, N. Y.	21	0	21	25	16
Syracuse, N. Y.	21	0	21	23	18
Boston, Mass.	21	0	21	23	18
Augusta, Me.	21	3	24	27	18
Manchester, N. H.	21	2	23	27	18
Burlington, Vt.	21	2	23	25	18

*In steel barrels.

ATLANTIC REFINING

Pittsburgh, Pa.	20	0	20	*25	17
Philadelphia, Pa.	20	0	20	*25	17
Allentown, Pa.	20	0	20	*25	17
Erie, Pa.	18	0	18	*23	15
Scranton, Pa.	20	0	20	*25	17
Altoona, Pa.	20	0	20	*25	17
Dover, Del.	20	2	22	25	17
Wilmington, Del.	20	2	22	25	17
Providence, R. I.	21	1	22	24	18
Boston, Mass.	21	0	21	23	18
Springfield, Mass.	21	0	21	23	18
Worcester, Mass.	21	0	21	23	18
Hartford, Conn.	21	2	23	26	17
New Haven, Conn.	21	2	23	26	18

*Contains 2-cent tax collected by retail dealer and paid by him directly to state.

S. O. KENTUCKY

Lexington, Ky.	20	5	25	28	18
Louisville, Ky.	19	5	24	27	17
Covington, Ky.	19	5	24	27	18
Clarksdale, Miss.	19	4	23	26	16.5
Jackson, Miss.	19	4	23	26	16.5
Natchez, Miss.	18.5	4	22.5	25.5	16
Vicksburg, Miss.	18.5	4	22.5	25.5	16
Birmingham, Ala.	20	2	22	25	18.5
Mobile, Ala.	19	2	21	24	17
Montgomery, Ala*	21	2	23	26	19.5
Atlanta, Ga.	†21	3½	25	28	19
Augusta, Ga.	†21	3½	25	28	19
Macon, Ga.	†21	3½	25	28	19
Savannah, Ga.	†19	3½	23	25	17
Jacksonville, Fla.	19	4	23	26	17
Miami, Fla.	21	4	25	28	18.5
Tampa, Fla.	19	4	23	26	17
Pensacola, Fla.	19	4	23	26	17.5

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

†Georgia has ½ cent per gal. inspection fee on gasoline which is deducted as well as the state gasoline road tax of 3½ cents, to get the actual net tank wagon market to dealer.

S. O. INDIANA

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Chicago, Ill.	†19	0	†19	21	15.5
Decatur, Ill.	19.2	0	19.2	21.2	16
E. St. Louis, Ill.	18.1	0	18.1	20.35	15.1
Joliet, Ill.	19.4	0	19.4	21.4	16.2
Peoria, Ill.	19.2	0	19.2	21.2	16
Quincy, Ill.	19.2	0	19.2	21.2	15.8
Indianapolis, Ind.	19.2	3	22.2	24.2	16.2
Evansville, Ind.	19	3	22	24	16
South Bend, Ind.	19.4	3	22.4	24.4	16.4
Detroit, Mich.	19.8	2	21.8	23.8	16.7
Grand Rapids, Mich.	19.7	2	21.7	23.7	16.6
Saginaw, Mich.	19.9	2	21.9	23.9	16.8
Green Bay, Wis.	18.6	2	20.6	22.6	16.3
Madison, Wis.	19.3	2	21.3	23.3	16
Milwaukee, Wis.	19.1	2	21.1	23.1	15.8
La Crosse, Wis.	20.2	2	22.2	24.2	16.9
Minneapolis, Minn.	20.2	2	22.2	24.2	17.1
Duluth, Minn.	20.5	2	22.5	24.5	17.1
Mankato, Minn.	20.1	2	22.1	24.1	16.9
Des Moines, Iowa	19.5	2	21.5	23.5	16.4
Davenport, Iowa	19.5	2	21.5	23.5	16.4
Sioux City, Iowa	19	2	21	23	16
Mason City, Ia.	19.5	2	21.5	23.5	16.4
St. Louis, Mo.	*18.6	2	20.6	22.9	15.5
Kansas City, Mo.	††19.9	2	21.9	23.9	14.8
St. Joseph, Mo.	*19	2	21	23	15.4
Fargo, N. D.	21.9	2	23.9	25.9	19.1
Grand Forks, N. D.	22.2	2	24.2	26.2	19.4
Minot, N. D.	21.9	2	23.9	25.9	19.1
Pierre, S. D.	20.5	3	23.5	25.5	17.6
Huron, S. D.	20.5	3	23.5	25.5	17.6
Wichita, Kans.	**17.8	2	19.8	21.8	15.3
Bartlesville, Okla.	17.8	3	20.8	22.8	15.3

†Dumps of 100 or more gallons at 18c per gallon.

*Includes city tax of ½c.

††Includes city tax of 1c.

**Dumps of 50 gallons or more in Kansas, 1c discount per gallon.

S. O. NEBRASKA

Crawford, Neb.	20	2	22	*	16.75
Omaha, Neb.	19.25	2	21.25	23.75	16
McCook	20.75	2	22.75	24.75	17.5
Norfolk	19.75	2	21.75	23.75	16.5
North Platte	20.75	2	22.75	24.75	17.25
Scottsbluff	20.25	2	22.25	24.25	16.75

*Standard has no service station here.

CONTINENTAL OIL

Denver, Colo.	20	2	22	22	18
Pueblo, Colo.	20	2	22	24	18
Casper, Wyo.	20	2½	22.5	24.5	16.5
Cheyenne, Wyo.	21	2½	23.5	25.5	16
Butte, Mont.	22	2	24	24	20.5
Helena, Mont.	24	2	26	28	20.5
Salt Lake City, Utah.	22.5	3½	26	28	19
Boise, Ida.	24	3	27	29	21
Albuquerque, N. M.	25.5	3	28.5	28.5	20

S. O. CALIFORNIA

Phoenix, Ariz.	22	3	25	28	21.5
Los Angeles, Cal.	14.5	2	16.5	20.5	15.5
Fresno, Cal.	16.5	2	18.5	22.5	17.5
San Francisco, Cal.	16	2	18	22	15.5
Reno Nev.	19.5	4	23.5	27.5	19
Portland, Ore.	16	3	19	23	16.5
Seattle, Wash.	16	2	18	22	16.5
Spokane, Wash.	20	2	22	26	20.5
Tacoma, Wash.	16	2	18	22	16.5

S. O. LOUISIANA

Little Rock, Ark.	18	4	22	25	16
Alexandria, La.	18	2	20	23	17
Baton Rouge, La.	17	2	19	22	15.5
Lake Charles, La.	18.5	2	20.5	23.5	17
New Orleans, La.	*18.5	2	20.5	23.5	16
Shreveport, La.	17	2	19	22	16
Lafayette, La.	18	2	20	23	16.5
Bristol, Tenn.	21	3	24	27	17.5
Chattanooga, Tenn.	20.5	3	23.5	26.5	17.5
Knoxville, Tenn.	20.5	3	23.5	26.5	18
Nashville, Tenn.	18	3	21	24	18
Memphis, Tenn.	17	3	20	23	17

*Includes 1c city tax on gasoline and kerosene.

S. O. OHIO

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
All Ohio points	20	2	22	24	17

MAGNOLIA PETROLEUM

Muskogee, Okla.	17	3	20	23	14
Oklahoma City	15	3	18	21	14
Tulsa, Okla.	17	3	20	23	14
Fort Smith, Ark.	18	4	22	25	15.5
Little Rock, Ark.	18	4	22	25	15.5
Texarkana, Ark.	20	4	*24	*24	15
Dallas, Tex.	16	1	**17	17	14
El Paso, Tex.	20	1	**21	21	15
Fort Worth, Tex.	16	1	**17	17	14
Houston, Tex.	20	1	**21	21	14
San Antonio, Tex.	18	1	**19	19	14

*Within city of Texarkana, Ark., the state tax on gasoline is 1c per gal. conforming with the Texas state tax. In Texarkana district outside of the city the 4c state tax applies.

**Magnolia is maintaining only one price schedule in Texas—its retail schedule. This is in keeping with its contract, effective May 5, which allows the dealer 3c off the retail price.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changed)

	Oleum Spirits	V.M.&P. Naphtha	Cleaners Naphtha
Chicago	21	23	21
Detroit	22.2	24.7	22.7
Kansas City	21.2	23.2	21.2
Milwaukee	21.2	*25.7	*23.7
Minneapolis	*24.5	*27	*25
St. Louis	20.4	22.9	22.2
New York	...	22	...

*Includes 2c state tax.

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Toronto	26.5	3	29.5	33	24
Ottawa	26.5	3	29.5	33	24
Cochrane	31.5	3	34.5	40	29
Ft. William	28.5	3	31.5	36	26.5

MANITOBA

Winnipeg	29.5	3	32.5	36	26.5

SASKATCHEWAN

Regina	32.5	0	32.5	37	29.5

ALBERTA

Edmonton	31.5	2	33.5	37	28.5
Calgary	29.5	2	31.5	35	26.5

BRITISH COLUMBIA

Vancouver	23	3	26	30	23

QUEBEC

Montreal	26.5	3	29.5	33	24
Quebec City	28.5	3	31.5	35	26
Three Rivers	28.5	3	31.5	35	26

NEW BRUNSWICK

St. John	29.5	3	32.5	36	27
Moncton	29.5	3	32.5	36	27.5

NOVA SCOTIA

Halifax	29.5	3	32.5	36	27
Sydney	31.5	3	34.5	37	27.5

PRINCE EDWARD ISLAND

Charlottetown	29.5	3	32.5	36	27

Note: In districts surrounding these points 1c additional is added to city price.

Increased Trade Expected with France; But Present Business is Quiet

By Special Correspondent

New York, Sept. 7.

MORE buying of gasoline and kerosene is expected from France. An inquiry for 6500 tons of gasoline and kersoene was in the market last week. Two independent distributors, one at Boston and the other at Buffalo, have cut gasoline tank wagon prices. At the same time gasoline is said to be strong in the fields. Lubricating oils continue quiet and inclined towards easiness except neutral oils and bright stocks. Waxes are slightly lower.

Export Gasoline—New York

U. S. Motor gasoline is readily obtainable at 12½ cents a gallon at New York harbor refineries. As far as large inquiries go, the Gulf export market appears more active than in northeastern markets. U. S. Motor sells at $28.90 in cases. The California grade f.o.b. New York in bulk sells at the same figure as other standard eastern grades.

Export Gasoline—Gulf Ports

Gasoline for export is in a fairly healthy state. The usual late fall stimulation for export is expected this year. Prices in the main are steady. U. S. Motor in bulk is no better than 11⅞ cents a gallon, f.o.b. seaboard, while 64-66 375 end point gasoline is 13⅜ cents a gallon, down about ⅛ cent. An inquiry for late September shipment to France specifies 1000 tons of U. S. Motor gasoline, 3500 tons of 64-66 375 e.p. gasoline, 2000 tons of prime white kerosene and 1000 tons of water white.

Domestic Gasoline—New York

Several cross currents in the gasoline market make the future rather difficult to forecast. There are those who look for a price cut at eastern refineries shortly after Labor Day, but this is based rather on the assumption of a falling off in motoring rather than the economics of the situation. On the bearish side were the cuts of 2 cents in tank wagon prices by two independent distributors at Boston and Buffalo. On the other side of the picture is the strength of the market in the field. Consumption of gasoline is unusually heavy. Against the argument that motoring will be falling off, must be mentioned the growing use of closed cars. Jobbing demand is quieter, following the stocking up for Labor Day. U. S. Motor at New York harbor refineries is 12½ cents and 13½ cents delivered.

Domestic Gasoline—Gulf Ports

Gasoline prices are essentially unchanged. Jobbers have been purchasing more freely. U. S. Motor was offered at 12¼ cents a gallon.

Export Kerosene—New York

Export demand for kerosene from eastern refineries has not been so brisk as expected. Rumania seems to be taking care of a large part of the European demand. However, the domestic call for kerosene is so large that export business is not needed just now. Water white sells at 10½ cents a gallon at refineries. Water white in cases is $21.15 and standard white $19.65.

Export Kerosene—Gulf Ports

The market for export kerosene is in a strong position and refiners are advising their foreign customers that they never again need to expect prices to go back to the old levels. Most refineries are predicting higher prices for kerosene, though this is by no means a universal opinion. A readjustment downward in quoted prices of 10 cents a case has been made in the two principal grades of kerosene. Thus the common price for water white is now $2 a case, while prime white is $1.85.

The inquiry reported a week ago for 1,600,000 gallons of gasoline and kerosene for shipment to France has become an order. There is a new inquiry from the same country, latter half of September shipment, for 2000 tons of prime white and 1000 tons of water white, with 4500 tons of gasoline. Prime white now sells at 9 to 9¼ cents; water white at 10½ to 11 cents in one direction, though prices ¼ cent lower have been done.

Domestic Kerosene

Sentiment in kerosene is still bullish, however, there being many who predict that kerosene will reach the same price levels as gasoline. Bulk water white sells at 10½ cents a gallon at refineries and 11½ cents delivered to the trade. Prime white is 10 cents a gallon at refineries and 11 cents delivered.

Lubricants—New York

Virtually no improvement has taken place in lubricants. Cylinder stocks have shown no life for two months, but neutral oils and bright stocks are in good demand. Quotations on cylinder oils have been reduced ½ cent to 1 cent per gallon, but this has not stimulated business. Buyers are offering 5 cents a gallon under quotations of refiners and, of course, are not getting such drastic concessions. Refiners are pretty well loaded stocked with cylinder oil, it is said, and are holding the oil in the hopes of getting higher prices sooner or later. Pennsylvania unfiltered 600 steam refined cylinder oil, in barrels can be bought at 19½ cents a gallon, a reduction of 1 cent.

Lubricants—Gulf Ports

Demand for lubricating oils is slow but prices in the main are unchanged. Export demand for zero cold test oil is improving to some extent, as is natural for this time of year. More business with France is expected shortly in view of the higher franc.

Bunker Oil—New York

Grade C bunker oil, f.o.b. New York refineries, has been holding at $1.75 a barrel and 6½ cents a barrel higher f. a.s. New York harbor. The scarcity in the Gulf market helps the tone of the market here. Diesel oil is moderately active and prices are firm at $2.50 a barrel. Pennsylvania refiners posted an advance of ¼ cent a gallon for fuel oil.

Bunker Oil—Gulf Ports

Grade C, bunker oil, which a week ago was minimum at $1.55 a barrel, had virtually become $1.60 during the last week. The same grade, f.o.b. steamer Tampico, was also 5 cents a barrel higher. Not much fuel oil, except from California, is available.

Gas Oil—New York

Prices of gas oils are unchanged. Refiners are maintaining prices stoutly and concessions are few and far between, 36-40 being firmly held at 6¾ cents a gallon, refinery, with 28-34 going at 6 cents.

Gas Oil—Gulf Ports

The 26-28 gravity light gas oil is down ¼ cent per gallon at 5⅜ cents, while 32 plus, dark, still sells at 5½ cents in bulk. These prices, however, are higher than usual for the season. This fact is making buyers cautious. They feel that lower prices may be had later.

Petrolatums

Both export and domestic demand for petrolatums is quiet. Prices, however, are steady. Medicinal oils have only a routine demand.

Waxes—New York

Slightly lower prices ruled on the waxes, particularly the crude scales. Export demand on the whole is disappointing. Export business in fully refined grades is poor despite the lower prices because Polish waxes are being sold abroad more cheaply than American waxes. Jobbers and exporters complain that it is difficult to buy from refiners, who say they have no wax available. New York wax marketers say refiners are selling direct to European

consumers at low prcies. White crude scale 122-124 A.m.p. can be bought as low as 5 cents a pound, f.a.s carload lots, yet some jobbers report sales as high as 5¼ cents f.o.b. New York for last quarter shipment. Foreign inquiry has been mostly from England and Italy.

Waxes—Gulf Ports

Semi-refined wax, 124-126 A.m.p. is firmer on increased sales to South America. This business has caused more firmness in the white crude scale market. White crude scale, 124-126 A.m.p., is quoted at 5⅛ cents and semi-refined at 5¼ cents f.o.b. steamer. Fully refined waxes are dull. The 125-127 A.m.p. grade is quoted at 5⅝ cents f.o.b. steamer for prompt shipment.

Quiet Week Prevails In Texas Panhandle

Staff Special

HOUSTON, Sept. 4.—The completion of 21 oil wells in Hutchinson county in the seven days ended September 2, last, added only 3960 barrels of initial flush production in the Texas Panhandle district.

The daily average yield of the territory was not materially changed from that of the preceding week, when Hutchinson, Gray, Wheeler and Potter counties together gave up a combined total reaching almost to 117,000 barrels daily.

Hutchinson county's 21 new completions brought the Texas Panhandle district total of producing wells up to 369, as of September 2, the field average of production amounting to between 315 and 320 barrels, per well per day.

With field production nearly doubled since the middle of July, when 217 wells had reached total daily average of 60,703 barrels, it becomes apparent that 152 completions in about six weeks time had been required to bring about the increased output mentioned.

A total of 235 test wells, of which 170 are in Hutchinson county, are now drilling below 2000 feet in the Texas Panhandle. These promise to be quickly completed, as fast as facilities can be provided for taking care of production in the intensively developed area of Hutchinson county particularly.

Wells drilling below 2000 feet are divided, by counties, as follows: Hutchinson, 170; Carson, 16; Potter, 1; Moore, 2; Dallam, 1; Gray, 33; Wheeler, 4; Lipscomb, 1; Ochiltree, 1; Texas county, Okla., 6.

Including the wells now down below 2000 feet and others in various stages of drilling, operations under way in the Panhandle region total 637. These do not include 24 new locations in Hutchinson county, four in Gray, two in Wheeler, one in Lipscomb, one in Carson, and another in the Canadian river bed.

Complete Export Markets

New York Export Market

GASOLINE	Sept. 6	Aug. 30
U. S. Motor Tank cars Ref.	12½	12½-12¾
U. S. Motor cases	28.90	-28.90
California grade U. S. Motor F. O. B. N. Y. Bulk	12½	12½-12¾
KEROSENE		
43-45-150 W.W.Tank cars Ref.	10½	-10½
43-45-150 W.W.Cases	21.15	-21.15
42-44-110 S.W.Cases	19.65	-19.65
GAS OIL		
36-40, Bulk Refinery	-06¾	-06¾
28-34, Bulk Refinery	-06	-06
MEXICAN BUNKER OIL		
Grade C, f. o. b. ref. Bulk	1.75	- 1.75
Diesel Oil f. o. b. ref. Bulk	2.50	- 2.50

LUBRICATING OILS

The following prices are cooperage basi f. o. b. New York, products being manufactured by inland refineries.

CYLINDER OILS (Bbls.) 1 inch Immersion Test; All Penna. Products	
Filtered D 600	-29
Filtered E 600	-28
Unfiltered 600 s. r.	-20½
Unfiltered 650 s. r.	-27½
600 flash s. r.	-28½
630 Flash	.38½

RED PARAFFIN (Bbls.) (Viscosity at 70)		
300 vis.	No. 5 color 21	-21
250 vis.	No. 5 color 20	-20
High Viscosity	No. 5 color 25	-25

NEUTRAL OILS (Bbls.) (Viscosity at 70)		
200 vis.at F.Pale.	No. 3 color -31	-31
180 Pale.	No. 3 color -29	-29
150 Pale.	No. 3 color -24½	-24½

BLACK OIL (Bbls.)	
25-30 cold test	13¾ -13¾
15 cold test	14½ -14½

MEDICINAL OILS
(Includes Price of Drums)
(Penna. Stocks)

	Sept. 6	Aug. 30
Domestic 875-885 s. g.	- .85	- .85
Domestic 865-.870 s. g.	.75- .80	.75- .80
Russian 885-.890 s. g. 325-330 vis	1.10-1.25	1.10-1.25

WAXES

(Penna. Stocks)
(F. A. S. Carload Lots)

WHITE CRUDE SCALE		
122-124 A. m. p.	-05	-.05½
124-126 A. m. p.	5.12½	-5.20
MATCH		
105-108 A. m. p.	-06	-06
FULLY REFINED		
120-122 A. m. p.	-05¾	-05¾
123-125 A. m. p. Philadelphia	-05¾	-05¾
125-127 A. m. p.	-5.75	-5.80
128-130 A. m. p.	-06	-06
130-132 A. m. p.	-06¼	-06¼
133-135 A. m. p.	-06¼	-06¼
135-137 A. m. p.	-06¾	-06¾
SEMI REFINED		
122-124 A. m. p.	.....	.....
YELLOW CRUDE SCALE		
124-126 A. m. p.	-05	-05

PETROLATUMS
(Penna. Stocks)
Per Pound

Dark Green	02¾-03	02¾-03
Veterinary	03¼	03¼
Light Amber	03¾	03¾
Dark Amber	03½	03½
Cream	06¼	06¼
Lily White	08¼	08¼
Snow White	10¾-11	10¾-11

Gulf Export Market

GASOLINE
F. O. B. Seaboard
(Shipments of 20,000 Bbls. and over)

	Sept. 6	Aug. 30
U. S. Motor, Bulk	11⅞	11⅞-.12⅛
60-62 400 e. p. Bulk	12½-12¾	-.12½
61-63-390 e. p. Bulk	13	-.12¾
64-66 375 e. p. Bulk	13¾	-.13½
U. S. Motor, Cases (cargo lots	2.20	2.20
64-66, Cases (cargo lots)	2.35	2.40
KEROSENE		
Water White, 43-45 bulk	10¼	10¼-10½
Prime White, 41-43 bulk	08¾-09	-09
Water White, cases (cargo lots)	2.00	-2.10
Prime White, cases (cargo lots)	1.85	-1.95
DOMESTIC GAS AND BUNKER OIL		
26-28, gravity, bulk*	05¾	-05¾
32 plus, bulk, Dark	05½	-05½
Grade C. Bunker oil	1.60	-1.55
Cargoes	1.40	-1.40

*Transparent through neck of a 4 oz. bottle.

MEXICAN CRUDE AND BUNKER OILS
F. O. B. Steamer Tampico

Heavy, Taxes to be added	1.12	-1.10
Grade C, Bunker oil Taxes paid...cargoes	1.40	-1.35
Grade C, Bunker oil F. O. B. New Orleans	1.60	-1.60

SOUTH TEXAS
(Viscosity at 100° F: cold test 0)
(Tanker, F. O. B. Houston)

*LUBRICATING OILS	Sept. 6	Aug. 30
100 Vis. No.2 Unfiltered Pale	07¼	07¼
150 Vis. No.2½ Unfiltered Pale,	09¼	09¼
200 Vis. No.3 Unfiltered Pale	10¾	10¾
300 Vis. No.3 Unfiltered Pale	13	13
500 Vis. No.3½ Unfiltered Pale,	14¼	14¼
200 Vis. No.5½ Red Oil	10¼	10¼
300 Vis. No.5½ Red Oil	10¼	10¼
500 Vis. No.6 Red Oil	11	11
800 Vis. No.6 Red Oil	16	16

*These prices are entirely nominal owing to wide fluctuations.

Pacific Export Market

(Cargo lots quotations at seaboard, Los Angeles)

	Sept. 6	Aug. 30
Gasoline, U. S. Motor—54°-56°	10 -10½	10 -10½
Gasoline, U. S. Motor—blends and special cuts	10½-11	10½-11
Gas Oil, 24°—30°B. per bbl	$1.15	$1.15
Diesel Oil, 27°B—plus per bbl	$1.15	$1.15
Bunker Oil, 14°—18°B. per bbl	$1.00	$1.00
Fuel Oil, 14°—18°B. per bbl	$1.00	$1.00
Kerosene, W. W. 38°—40° B per gal., 125-150 flash test	05¾-06¾	.05¾-.06¾
Cased Goods		
Gasoline, U. S. Motor	$2.25	$2.55
Kerosene, W. W. 38°—40° B per case, flash test 125-150	$1.50-1.55	$1.50-1.55

N. Y. Domestic Market

The following light oil, gas and fuel oil prices are F. O. B. New York refineries, being products made from Domestic (including California) and Mexican Crudes.

	Sept. 6	Aug. 30
U. S. Motor Gasoline, Tank Cars Delivered greater N.Y.	13¼	13¼-13¾
U. S. Motor Gasoline, Tank Cars Bayonne	12½	12½-12¾
U. S. Motor, Tank Cars, *Atlantic Seaboard Terminals	12½	12½-12¾
Kerosene, 44 150 W. W. Tank Cars de'd greater N.Y.	-11¼	-11
Grade C Bunker f.o.b. N.Y. Ref.	1.75	1.75
Diesel Oil f.o.b. Refinery	2.50	2.50
Gas Oil, 36-40, Bulk Refinery	-06¼	-06¼
Gas Oil, 28-34 Bulk, Refinery	.06	-06¼

*New York, Philadelphia, Portsmouth, Va. Charleston, S. C.

Crude Oil Prices All Fields

PRICES IN EFFECT, *Sept. 6, 1926*

EASTERN FIELDS
Posted by Joseph Seep Purchasing Agency

Penna. Grade Oil in New York Transit Lines (Allegheny, N. Y. District)	$3.40
Bradford District Oil in National Transit Lines (Bradford District)	3.40
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	3.30
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	3.30
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	3.25
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	3.05
Keister Grade in National Transit Lines (Butler Co.)	2.30
Gaines, Tioga Co. (Pa.)	2.85
Cabell Grade in Eureka Pipe Lines (West Virginia)	2.40
Corning Grade in Buckeye Pipe Lines (Ohio)	2.55
*Somerset Medium in Cumberland Pipe Lines (Kentucky)	2.50
*Somerset Light in Cumberland Pipe Lines (Kentucky)	2.65
Ragland Grade in Cumberland Pipe Lines (Kentucky)	1.25

*Somerset oil run prior to Oct. 1, 1923, takes price of 6 cents lower than above quotations.

Posted by Stoll Oil Refining Co.

Tinsley Bottom, Tenn. oil in Stoll Oil Refining Co. lines	$2.46
Oil City, Ky. oil in Stoll Oil Refining Co. lines	2.65

CENTRAL STATES FIELDS
Posted by Ohio Oil Co.

Wooster	$2.55	Illinois	$2.37
Lima	2.48	Plymouth	1.99
Waterloo	1.35	*Canadian Petrolia	2.88
Indiana	2.25	*Posted by Imperial Oil, Ltd.	
Princeton	2.37		

OKLAHOMA, KANSAS And NORTH TEXAS
Prices of Prairie Oil & Gas Co.
(In Oklahoma, Kansas, North and East Centra Texas) Effective May 15, 1926.

28-28.9	$1.65	41-41.9	$2.69
29-29.9	1.73	42-42.9	2.77
30-30.9	1.81	43-43.9	2.85
31-31.9	1.89	44-44.9	2.93
32-32.9	1.97	45-45.9	3.01
33-33.9	2.05	46-46.9	3.09
34-34.9	2.13	47-47.9	3.17
35-35.9	2.21	48-48.9	3.25
36-36.9	2.29	49-49.9	3.33
37-37.9	2.37	50-50.9	3.41
38-38.9	2.45	51-51.9	3.49
39-39.9	2.53	52 and above	3.57
40-40.9	2.61		

The Texas Co. posted same gravity and price as Prairie.

Humble Oil & Refining Co. Prices
(Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

Humble's grades and prices same as Prairie schedule. In fields where Humble purchases crude below 28°, 8 cents less for each full degree.

Mirando, Tex	$1.00

Magnolia Petroleum Co. Prices
In Oklahoma, Kansas and North and East Central Texas

Same grades and prices as posted by Prairie, excepting that Magnolia is paying $1.30 for all oil below 28 gravity.

Corsicana heavy	$1.25

PANHANDLE, TEXAS
Prices of Kay County Gas Co. and Magnolia Petroleum Co.

28-28.9	$1.35	34-34.9	$1.65
29-29.9	1.40	35-35.9	1.70
30-30.9	1.45	36-36.9	1.75
31-31.9	1.50	37-37.9	1.80
32-32.9	1.55	38-38.9	1.85
33-33.9	1.60	39 and above	1.90

Humble Oil & Refining Co.

Same grades and prices as Kay County Gas Co. and Magnolia Petroleum Co., excepting these five grades of light oil posted on June 21:

39-39.9	$1.90	42-42.9	$2.05
40-40.9	1.95	43-43.9	2.10
41-41.9	2.00	44 and above	2.15

NORTH LOUISIANA—ARKANSAS FIELDS
***Prices of the Standard Oil Co. of Louisiana**

Caddo, below 26	$1.40
" 26-28.9	1.55
" 29-31.9	1.70
" 32-34.9	2.25
" 35-37.9	2.35
" 38 and above	2.45
Homer, below 31	1.85
" 31-32.9	2.00
" 33-34.9	2.10
" 35 and above	2.20
Haynesville, below 33	2.00
" 33 and above	2.10
El Dorado, including Lisbon, below 33	2.00
" 33-34.9	2.10
" 35-36.9	2.20
" 37 and above	2.30
Bull Bayou, 32-34.9	1.95
" 35-37.9	2.10
" 38 and above	2.25
Smackover, below 24	1.10
" 24-24.9	1.35
" 25-25.9	1.40
" 26-26.9	1.45
" 27 and above	1.50
De Soto	2.30
Crichton	2.10
Bellevue	1.50
Cotton Valley	1.20
**Urania, La	1.10

*Gulf, Louisiana Oil Refining and The Texas Co. same prices as Standard.

**Posted by Louisiana Oil Refining Corp.

Gulf is paying 95c for Calion (East El Dorado Crude.)

STEPHENS, ARKANSAS
Posted by Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

26 and above	$1.65	Below 26	$1.45

GULF COASTAL FIELDS
Posted by Humble Oil & Refining Co.

Grades A	$1.40	29-29.9	$1.65
Grades B:		30-30.9	1.70
Below 25	1.40	31-31.9	1.75
25-25.9	1.45	32-32.9	1.80
26-26.9	1.50	33-33.9	1.85
27-27.9	1.55	34-34.9	1.90
28-28.9	1.60	35 and above	1.95

Fields classified as A and B are Goose Creek, Hull, Liberty, West Columbia, Orange, Boling and Pierce Junction. All other fields are Grades A only.

Prices of The Texas Co.

Grades A	$1.60	*Grades B	$1.60
‡Grades B (light crude):			
35-35.9	$2.05	38-38.9	$2.20
36-36.9	2.10	39-39.9	2.25
37-37.9	2.15	40 and above	2.30

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on oil below 35° is same as Humble's postings on Grades B.

SPINDLETOP
Humble Oil & Refining Co.

Grade A	$1.25	27-27.9	$1.40
Grades B:		28-28.9	1.45
Below 25	1.25	29-29.9	1.50
25-25.9	1.30	30-30.9	1.55
26-26.9	1.35	31-31.9	1.60

ROCKY MOUNTAIN FIELDS
Prices of Ohio Oil Co. and Midwest Refining Co.

‡Salt Creek	29-29.9	$1.73
" "	30-30.9	1.81
" "	31-31.9	1.89
" "	32-32.9	1.97
" "	33-33.9	2.05
" "	34-34.9	2.13
" "	35-35.9	2.21
" "	36-36.9	2.29
" "	37 and above	2.37
Elk Basin		2.40
Grass Creek light		2.40
Big Muddy		2.25
Lance Creek		2.40
Rock Creek		2.25
‡Osage		2.40
‡Cat Creek, Mont.		2.40
Sunburst, Mont.		1.05
‡Hogback, N. Mex.		2.45
Artesia, N. Mex.		2.20

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light, and Elk Basin.

The Texas Co. buys Salt Creek and Big Muddy crude.

CALIFORNIA
Standard Oil Co. of California

Santa Maria and Ventura Posted by *Union Oil Co.

Gravity	Signal Hill Huntington Beach	Ingle-wood Torrance	Newhall, Olinda-McKittrick, Whittier La Habra	Kern River	Brea Canon, Richfield	Athens-Rosecrans Dominguez	Monte-bello	Coyote Hills	Santa Fe Springs	Midway-Sunset Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria	Ventura
14-14.9	$ .85	$ .85	$ .85	$ .75	$ .85	.....	$ .85	$ .85	.....	$ .75	$ .75	$ .75	$ .75	$ .85	$ .85
15-15.9	.87	.87	.85	.75	.87	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
16-16.9	.90	.90	.85	.75	.90	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
17-17.9	.94	.94	.85	.75	.94	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
18-18.9	.98	.98	.86	.75	.98	.....	.86	.86	.....	.75	.75	.75	.75	.85	.85
19-19.9	1.04	1.04	.87	.75	1.04	.....	.87	.87	.....	.75	.75	.75	.75	.85	.85
20-20.9	1.10	1.10	.89	.....	1.10	.....	.89	.90	.....	.82	.82	.79	.78	.90	.90
21-21.9	1.16	1.16	.91	.....	1.16	.....	.91	.98	.....	.90	.90	.86	.81	.97	.97
22-22.9	1.22	1.22	.94	.....	1.22	.....	.94	1.06	.....	1.00	1.00	.93	.85	1.04	1.04
23-23.9	1.28	1.28	.....	.....	1.28	.....	.97	1.14	.....	1.11	1.11	1.00	.89	1.11	1.11
24-24.9	1.34	1.34	.....	.....	1.34	$1.34	1.01	1.22	$1.02	1.22	1.22	1.07	.93	1.18	1.18
25-25.9	1.40	1.40	.....	.....	1.40	1.40	1.05	1.30	1.08	1.33	1.33	1.14	.97	1.25	1.25
26-26.9	1.46	1.46	.....	.....	1.46	1.46	1.09	1.38	1.16	1.44	1.44	1.21	1.01	1.32	1.32
27-27.9	1.52	1.52	.....	.....	1.52	1.52	1.13	1.46	1.24	1.55	1.55	1.28	1.05	1.39	1.39
28-28.9	1.58	1.58	.....	.....	1.58	1.58	1.17	1.54	1.32	1.66	1.66	1.35	.....	1.46	1.46
29-29.9	1.64	.....	.....	.....	1.64	1.64	1.21	1.62	1.40	1.77	1.77	1.42	.....	1.53	1.53
30-30.9	1.70	.....	.....	.....	1.70	1.70	1.25	1.70	1.48	1.88	1.88	1.49	.....	1.60	1.60
31-31.9	1.76	.....	.....	.....	.....	1.76	.....	.....	1.60	1.99	1.99	1.56	.....	.....	1.67
32-32.9	1.84	.....	.....	.....	.....	1.84	.....	.....	1.72	2.10	2.10	1.63	.....	.....	1.73
33-33.9	.....	.....	.....	.....	.....	1.92	.....	.....	1.84	2.21	2.21	1.70	.....	.....	1.79
34-34.9	.....	.....	.....	.....	.....	2.00	.....	.....	1.96	.....	2.32	1.77	.....	.....	1.85
35-35.9	.....	.....	.....	.....	.....	2.08	.....	.....	2.08	.....	.....	1.84	.....	.....	1.92
36-36.9	.....	.....	.....	.....	.....	2.16	.....	.....	2.16	.....	.....	.....	.....	.....	.....
37-37.9	.....	.....	.....	.....	.....	2.24	.....	.....	2.24	.....	.....	.....	.....	.....	.....
38-38.9	.....	.....	.....	.....	.....	2.34	.....	.....	2.34	.....	.....	.....	.....	.....	.....
39-39.9	.....	.....	.....	.....	.....	2.44	.....	.....	2.44	.....	.....	.....	.....	.....	.....
40-40.9	.....	.....	.....	.....	.....	2.54	.....	.....	.....	.....	.....	.....	.....	.....	.....
41-41.9	.....	.....	.....	.....	.....	2.64	.....	.....	.....	.....	.....	.....	.....	.....	.....
42-42.9	.....	.....	.....	.....	.....	2.74	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Union Oil Co. also purchases Long Beach crude and is maintaining the same gravity and price schedule in that field as the Standard maintains in Signal Hill and Huntington Beach fields. The Union also buys and pays the same prices as the Standard in the Rosecrans-Dominguez fields, on gravities ranging from 14 degrees to and including 24.9 degrees and in Santa Fe Springs, on gravities ranging from 20 to and including 28.9 degrees.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are the average market prices for the week on materials used by refiners and compounders f. o. b. shipping point as effective this date.

Refiners' Supplies

	Sept. 6	Aug. 30
Soda Ash light 58% bags.cwt.	$1.38	$1.38
Silicate of Soda 60 deg. drums.....cwt.	-$1.65	-$1.65
Sal Soda wks.....	.90- 1.10	.90- 1.10
Caustic Soda 70% solid..cwt.	- 3.10	- 3.10
Chloride of Lime.....cwt. works.....	- 2.00	- 2.00
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point.....per ton	10.50-11.00	10.50-11.00
Liquid Chlorine tank cars works.....lb.	- .04	- .04

Compounders' Supplies (Open Market)

Vegetable Oils—		
Linseed carloads spot.....lb.	11.5	11.8
Sept.-Dec.	11.5	11.3
Tanks, spot.....	10.7	11
Boiled carloads spot.....lb.	11.1	11.4
*Soya Bean spot, Bbls....lb.	14¾	14
Castor Oil—		
No. 1 Carlots, Bbls.....	-.12½	-.12½
No. 3 Carlots, Bbls.....	-.12	-.12
Animal Oils—		
English Degras.....lb.	.05½	-.05½
Domestic Degras, bbls., carloads.....lb.	-.04¾	-.04¾
*Horse.....lb.	-.08½	-.09
Oleic Acid—		
Dist. Bbls.....lb.	.09¾-.10¼	.09¾-.10¼
Saponified Bbls.....lb.	.11 -.11½	.11 -.11½
Lard Oils—		
Prime Winter Strained. to 1½ffa.	.40/45c.t.lb. .17	.18
Extra Winter Strained. 2 to 4½ffa.	.40/45c.t.lb. .12¾	.13¾
Extra..... 4 to 5 ffa.	.40/45c.t.lb. .12½	.13
Extra No.1 7 to 10 ffa.	.40/50c.t.lb. .11¾	.12
No. 1.....15 to 18 ffa.	.40/45c.t.lb. .11½	.11½
No. 2.....22 to 23 ffa.	.40/45c.t.lb. .11¼	.11¼
Prime Edible Tallow under 1½ffa.	40/45c.t.N.Y.....lb.	-.09¾	-.09⅞
Tallow acidless.....lb.	-.11¼	-.11¾
Lard Stearine.....lb.	nominal	nominal
Oleo Stearine.....lb.	-.12	-.11¾
Neatsfoot Oil—		
Pure.....bbls.-lb.	.15¾	.15¾
Extra.....do...lb.	.11¾	.12
No. 1.....bbls.-lb.	.11¾	.11½
Cold pressed.....lb.	.18¾	.18¾
Fish Oils—		
Menhaden Oil		
Light pressed.....gal.	-.65	-.65
White.....gal.	-.70	-.67
Yellow bleached.....gal.	-.68	-.70
*Herring tank cars coast.....gal.	-.47	-.50
Whale, extra winter bleached.....gal.	.82	-.82
Seal.....gal.		nomina
Naval Stores—		
Turpentine, N. Y.....gal.	.94¼	.95
Turpentine†.....gal.	.87¾	.89
Rosin, B. N. Y.....bbl.	14.30	14.25
Rosin, F. N. Y.....bbl.	15.55	15.30
Rosin, B†.....bbl.	12.55	12.60
Rosin, F†.....bbl.	14.05	13.80
Rosin Oil 1st run.....gal.	.78	.78
Rosin Oil 2nd run.....gal.	.82	.82
Pine Tar—		
Kiln Burnt.....bbl.	14.50	14.50
Retort.....bbl.	18.50	18.50
Alcohol—Denatured Formula 5		
Bbls.....gal.	-89	-86
Drums.....gal.	-32	-29

†Savannah, Ga. market.
*Nominal.

Gulf Coast Low Viscosity Lubes Are Scarce

HOUSTON, Sept. 7.—Gulf Coastal lubricant manufacturers are refraining from signing new contracts for low viscosity grades, which are scarce. Contract proposals recently have reflected the generally low spot prices. Prices under existing contracts automatically reflected the Gulf Coastal crude oil price reduction which was posted by Humble Oil & Refining Co. Aug. 30 and met later in the week by other crude purchasers. Contract lubricants take ½ cent a gallon reduction under these contracts.

Spot prices are generally unchanged, as manufacturers are selling goods made of higher priced crude. With winter demand for finished oils just ahead they feel, manufacturers say they are entitled to better prices in relation to crude costs than they have been able to get during the summer.

Eastern and Central Kentucky Markets

ASHLAND & LEXINGTON, KY., Sept. 7.—Refiners report steady demand and many inquiries for future shipments on U. S. Motor gasoline. Quotations in Central District are higher by ¼c than last week on all gasolines while kerosene in both districts remains unchanged. Today's quotations are:

	Eastern	Central
58-60 Gasoline	13¾	13
60-62 Gasoline	14¼	13¾
64-66 Gasoline	14⅝	14¼
68-70 Gasoline	15	..
41-43 Kerosene	10½	11½
24-26 Fuel Oil	5½	5½
Gas Oil	7	6

Los Angeles Water Shipments, Week Ended Sept. 4

(Barrels of 42 U. S. Gallons)

	Crude	Gasoline	Kerosene	Fuel Oil	All Products
Atlantic Domestic.....	347,803	152,753	.....	85,440	585,996
Atlantic Foreign.....	.....	.....	86,000	436,137	522,937
Pacific Domestic.....	333,663	116,887	.....	136,000	586,550
Pacific Foreign.....	.....	.....	.....	340,082	340,082
Total shipments for week ended Sept. 4 (34 tankers).....					2,035,565
Total shipments for week ended Aug. 28 (34 tankers).....					2,213,611
Total shipments for week ended Aug. 21 (37 tankers).....					2,526,013

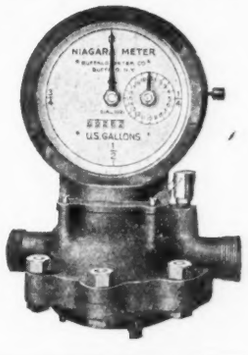
Ships Clearing for Atlantic Seaboard

Tanker	Destination	Consignee	Barrels
San Patricio	Buenos Aires	Eagle Oil Co.	92,278 Fuel
San Felix	Buenos Aires	Eagle Oil Co.	106,295 Fuel
In Verus	Southampton	Bankline Tank & Transportation	58,114 Fuel
Invergordon	Southampton	Bankline Tank & Transportation	50,170 Fuel
Varanger	Landsend	General Petroleum Corp.	96,000 Kerosene
Brazos	Guantanamo Bay	U. S. Navy	55,000 Fuel
Neches	Coco Solo	U. S. Navy	65 000 Fuel

SCARBRO, W. VA.—O. F. Kessler, owner of Kessler's Service Station, has just completed a station for car washing, which is operated as the Premier Auto Laundry. It is equipped with Alemite service, and cars can obtain a thorough greasing.

TOWANDA, PA.—Crader Oil & Supply Co., Inc., has just put into service one 400 gallon tank truck. It now has four trucks in use one of which is equipped with 1000 gallon tank, another with 600 gallon tank and two with 400 gallon tanks.

NIAGARA GASOLINE METERS



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Seven Thousand More Oil Wells At End of 1925 Than of 1924

CLEVELAND, Ohio

ACOUNT of the wells producing oil in the United States and the daily average of each, grouped by states, is included in the U. S. Bureau of Mines' final report on the statistics of petroleum for 1925. The compilation and arrangement of data is by G. R. Hopkins, petroleum economist, of the regular Bureau staff.

A grand total of 306,100 wells were reported at the end of the year as active, which is a gain of 7000 over the figure shown at the end of 1924. The report says that in 1925 a total of 16,559 oil wells were completed, which would indicate abandonment during the year of 9559 wells productive at the end of the previous year.

Figures given on producing wells as of the close of 1924 and 1925 are given in Table 1:

Offhand, an oil man would assert that Pennsylvania oil commanded a higher average price per barrel for 1925 than any other part of United States' territory. The Bureau compilation shows, however, that Alaska holds that honor, although the total production for 1925 was valued at only $34,000, an average of $4.25. The big flood of low-priced oil from Smackover in 1925 held down average price of Arkansas petroleum to .89 per barrel, lower by five cents than in 1924. Figures on value of oil at the well and average price per barrel over 1924 and 1925 are given by the Bureau as shown in Table 2 below:

Table No. 1

State	1924 Number wells	1924 Average per well per day	1925 Number wells	1925 Average per well per day
Alaska (1)	.....	....	.....	....
Arkansas	3,050	33.5	4,100	49.5
California	11,320	53.6	11,070	56.6
Colorado	70	25.8	80	64.1
Illinois	16,400	1.2	16,280	1.3
Indiana				
Southwestern	1,020	1.5	990	1.7
Northeastern	1,120	.5	1,010	.4
Kansas	18,000	4.0	18,600	5.6
Kentucky	12,450	1.5	13,100	1.3
Louisiana				
Gulf Coast	200	37.4	260	43.2
Rest of State	3,550	15.0	3,750	14.4
Michigan (1)	.....	....	.....	....
Montana	380	18.9	590	21.1
New Mexico	(1)	(1)	140	31.8
New York	15,000	.3	15,580	.3
Ohio				
Cent. & East	20,900	.6	21,120	.7
Northwestern	18 000	.3	17 940	.3
Oklahoma	60,500	8.1	59,400	7.7
Pennsylvania	74,350	.3	75 900	.3
Tennessee (1)	.....	....	.....	....
Texas	.....	....	.....	....
Gulf Coast	2,220	28.2	2,430	30.8
Rest of State	18,130	15.9	20,970	12.8
Utah (1)	.....		.....	
West Virginia	20,000	.8	19,940	.8
Wyoming	2,570	26.9	3.080	24.8
Other	70	....	30	....
Totals	299,100	6.2	306,100	6.5

(1) Included in "Other" which classification for 1924 embraced Alaska, New Mexico, Tennessee and Utah and in 1925 included Alaska, Michigan, Tennessee and Utah

Table No. 2

State	Value at the wells 1924 Total	1924 Aver age per barrel	1925 Total	1925 Average per barrel
Alaska	(1)		$ 34,000	$4.25
Arkansas	$ 43,130,000	$0.94	68,880,000	.89
California	(2) 274,653,000	1.20	(2) 330,610,000	1.42
Colorado	490,000	1.10	1,810,000	1.43
Illinois	140,220,000	1.76	15,235,000	1.94
Indiana:	.....	....	.....	....
Southwestern	1,200,000	1.80	1,245,000	1.92
Northeastern	520,000	1.93	370,000	2.06
Total Indiana	1,720,000	1.84	1,615,000	1.95
Kansas	44,400,000	1.54	74,410,000	1.94
Kentucky	14,592,000	1.97	15,682,000	2.32
Louisiana:	.....	....	.....	....
Gulf Coast	4,050,000	1.63	5,080,000	1.57
Rest of State	26,290,000	1.41	27,420,000	1.61
Total Louisiana	30,340,000	1.44	32,500,000	1.60
Michigan	.....	....	10,000	2.50
Montana	3,754,000	1.33	6,420,000	1.57
New Mexico	127,000	1.30	1,815,000	1.71
New York	5,245,000	3.64	6,270,000	3.70
Ohio:	.....	....	.....	....
Cent. & East	13,135,00	2.74	14,070,000	2.67
Northwestern	4,030,000	2.00	4,210,000	2.17
Total Ohio	17 165,000	2.52	18,280,000	2.53
Oklahoma	272,450,000	1.57	348,230,000	1.97
Pennsylvania	27,025,000	3.61	29,310,000	3.62
Tennessee	18,000	1.80	53,000	2.21
Texas:				
Gulf Coast	40,570,000	1.56	48,280,000	1.62
Rest of State	163,300,000	1.51	213,990,000	1.86
Total Texas	203,870,000	1.52	262,270,000	1.81
Utah	(1)	....	4,000	1.00
West Virginia	20,840,000	3.52	20,055,000	3.48
Wyoming	48,600,000	1.23	51,467 000	1.76
Other	(3) 44,000	3.38	.....	....
	$1,022,683,000	$1.43	$1,284,960,000	$1.68

Pure Oil Tanker Gets Bravery Medals

NEW YORK, Sept. 4.—A medal of valor for conduct in upholding the heroic traditions of the American merchant marine was presented recently in Philadelphia to the officers and crew of the S. S. "W. W. Mills," an oil tanker owned and operated by the Pure Oil Co., in the presence of government, city and port officials, as well as other prominent individuals.

On two occasions, the "Mills," whose home port is Philadelphia, rescued men from sinking ships. During a severe storm off the Florida coast, the crew of the "Mills," under the command of Capt. W. H. Maxwell, saved five men from the "Simmons" as that schooner was sinking, and previous to that rescue, the tanker, under the command of Capt. W. D. Evans, saved five survivors of the Norwegian steamer "Runa."

A bronze plaque was also presented to the officers and crew of the ship as a permanent record of bravery by W. W. Mills, a director of the Pure Oil Co. Beman G. Dawes, chairman of the board of that company, presided at the luncheon which was given at the Ritz Carlton, Philadelphia, on the day of the presentation of medals.

Others attending the ceremony were Rear Admiral F. C. Billard, commandant U. S. Coast Guard Service, Washington, D. C., and George Elliott, director of public safety of Philadelphia, who presented the medal of valor; A. R. Smith, ship commissioner of the port of Philadelphia, and Lt. Commander S. S. Teandle.

Those cited for bravery were Capt. Evans, Capt. Maxwell, chief mate H. Rosenberg, third mate H. Mathis and Harold Mathis, N. Anderson, boatswain, and O. Holmstrom, O. Kvande and W. Jurgliet, seamen.

KENOMA, MO.—The Three Bros. Supply Co. has sold its interest in the Liberty Oil Co., of Lamar, Mo., to Harry Blair, who is now the sole owner. The Three Bros. company will continue to sell lube oil to the garage trade in this territory, according to Fred Daetwegler, manager.

Transactions In Oil Shares on New York Stock Exchange

1925 High	1925 Low	1926 High	1926 Low		Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Sept. 3 Sales	First	High	Low	Last	Ch'ge
.....	.....	32⅞	24¼	(sh)	713,000	N.P.	Amerada Corp	40cQ	July 30, 26	13,400	31	31⅞	31	31⅛	+ ⅛
79¾	48	74	50	(sh)	200,000	N.P.	American Republics	.....	.....	.....	.....	.....	.....	.....	.....
47¾	32	59½	44¾	$	56,000,000	$25	Associated Oil	50cQ	July 24, 26	400	52¼	52¼	52	52	— ⅜
117½	95½	128¾	97		50,000,000	100	Atlantic Refining	.....	June 16, 24	9,300	113	116¾	112	112¼	— ¾
117¾	113½	120	115¼		20,000,000	100	do pfd	$1¾Q	Aug. 2, 26	100	116½	116½	116½	116½	+ ½
55½	18¾	33½	23¾		25,000,000	25	Barnsdall Corp. A	50cQ	July 1, 26	121,100	26	29½	26	28⅜	+2⅜
30	16	29½	25		8,713,275	25	do B	50cQ	July 1, 26	3,200	24⅞	26⅛	24⅞	25¾	+ 1
34⅜	25⅞	38⅛	30⅝	$	45,040,125	$25	California Petroleum	50cQ	Sept. 1, 26	27,700	32⅝	34	32½	33¼	+ ⅞
70	42½	94½	50		23,542,500	100	General Asphalt	.....	.....	92,100	93⅜	93⅜	87⅛	88⅝	—3⅜
109	86¼	140⅜	94⅞		7,416,000	100	do pfd	$1¾Q	Sept. 1, 26	1,200	137	138¾	131	131	—9⅛
59⅜	42	70¾	49½		29,429,550	25	General Petroleum	75cQ	June 1, 26	.. ....					
85	59	72	50¾		25,000,000	100	Houston Oil	.....	.....	12,900	59½	62¾	59½	62¾	+3¾
41¾	13½	34	19⅜	(sh)	500,000	N.P.	Independent Oil & Gas	25cQ	July 19, 26	10,100	24½	25½	24¼	25⅛	+ ½
14¼	5½	13¾	9	$	3,204,590	$10	Indian Refining	.....	Dec. 15, 20	800	9⅝	10¼	9⅝	9¾	+ ⅛
12⅝	6	12½	8		4,545,860	10	do ctfs	.....	.....	600	9½	9¾	9¼	9⅞	— ⅛
110	77	104	90		2,296,400	100	do pfd	.....	Dec. 15, 21	200	100	100⅜	100	100⅜	+5
1½	¼	¾	¼		1,678,760	10	Kansas & Gulf	.....	.....	200	¼	¼	¼	¼	0
.....	.....	24½	19⅜	(sh)	4,000,000	N.P.	Lago Oil & Transport	.....	.....	16,700	21⅞	22⅜	21¾	22	+ ⅛
23¾	13¾	19⅞	12	(sh)	1,131,216	N.P.	Louisiana Oil Refining	.....	.....	11,700	15⅞	17⅜	15½	16¾	— ⅛
.....	.....	97	93½	$	4,000,000	$100	do pfd	$1¾Q	Aug. 16, 26	200	94½	94½	94½	94½	— ⅞
35½	20¾	28⅞	20¾	(sh)	330,000	N.P.	Maracaibo Oil	.....	.....	3,600	24	24½	23½	23½	— ⅛
60½	32⅝	63⅜	49¼	(sh)	1,895,823	N.P.	Marland Oil Co	$1Q	June 30, 26	88,400	58¼	60¼	58	59¾	+1⅝
250	225	.....	.....	$	45,942,800	$100	Mexican Petroleum	$3Q	July 20, 26	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....		12,000,000	100	do pfd	$2Q	July 20, 26	.....	.....	.....	.....	.....	.....
22½	20	18¾	6	(sh)	945,939	N.P.	Mexican Seaboard	.....	Nov. 15, 24	1,900	11⅜	11⅜	10¾	11	— ½
88	25¾	37	27½	(sh)	1,357,800	N.P.	Mid-Continent Petroleum	.....	Aug. 1, 23	49,600	31⅞	33¼	31⅞	32⅝	+ ⅝
94¾	88	100⅜	90	$	6,718,000	$100	do pfd	$1¾Q	Sept. 1, 26	100	98½	98½	98½	98½	+ ½
8¼	⅝	2½	1⅜		25,415,540	10	Middle States	.....	July 1, 23	3,300	1¼	1¼	1⅛	1⅛	— ⅛
1½	1½	1⅜	⅞		4,384,680	....	do ctfs	.....	.....	1,000	⅞	⅞	⅞	⅞	0
78½	51⅝	88¼	1	(sh)	3,500,000	N.P.	Pacific Oil	$1.50S.A.	Jan. 20, 26	5,600	1½	1⅝	1½	1½	0
83⅞	59½	76½	56⅛	$	48,307,400	$50	Pan American P. & T	$1.50Q	July 20, 26	1,600	68	69½	68	68½	+1¼
84½	60⅛	78⅜	56⅞		91,025,100	50	do B	$1.50Q	July 20, 26	35,200	68⅛	69½	67¼	68¾	+ ¾
49¾	37¼	46	34	(sh)	400,000	N.P.	Pan American Western B	50cQ	July 30, 26	2,800	37½	38½	37	37½	0
6¼	2¼	32	4½	(sh)	198,770	N.P.	Panhandle P. & R	.....	.....	24,900	17⅝	20¾	27⅝	19⅜	+1⅞
60½	37	99⅜	51	$	2,935,200	$100	do pfd	.....	July 2, 23	100	81	81	81	81	+3
47⅛	36¾	49½	40	(sh)	2,406,692	N.P.	Phillips Petroleum	75cQ	July 1, 26	27,240	47⅞	52¾	47½	52¼	+4⅜
3¼	1¼	1⅞	⅝	$	29,622,925	$25	Pierce Oil Corp	.....	.....	700	¾	¾	⅝	⅝	0
40	20¼	27⅞	13½		15,000,000	100	do pfd	.....	Feb. 1, 22	200	14	14	14	14	+1
8¾	4½	7	3	(sh)	2,500,000	N.P.	Pierce Petroleum	.....	.....	7,600	3	3⅛	3	3	0
25⅝	12½	17½	11	$	11,467,850	$50	Producers & Refiners	.....	Sept. 15, 23	18,300	11⅞	14⅞	11⅞	14¼	+2¼
47⅝	27	35¼	30¾		2,845,350	50	do pfd	.....	May 1, 25	1,700	34½	*35¼	34	35	+3
33¾	25⅛	31	25⅜		75,959,250	25	Pure Oil Co	37½cQ	Sept. 1, 26	17,300	26½	28½	26⅜	27⅝	+ ¾
108½	103	112¾	106		18,000,000	100	do 8% pfd	$2Q	July 1, 26	.....	.....	.....	.....	.....	.....
57⅜	48¾	57⅜	49¼	(sh)	691,922	18.40	Royal Dutch, N. Y. shares	$1.739	Aug. 2, 26	5,800	51⅜	52	50⅞	51	— ⅜
40	30½	48⅝	41	(sh)	93,345	£2	Shell Transport & T	$1.21	July 24, 26	.....	.....	.....	.....	.....	.....
28⅜	21⅜	30½	24	(sh)	10,000,000	N.P.	Shell Union Oil	35cQ	June 30 26	68,900	29¾	*30½	29⅝	30½	+ ⅞
106½	99½	114	103	$	20,000,000	$100	do pfd	$1½Q	Aug. 15, 26	400	106¾	107½	106¾	107½	+ ⅛
28½	17¾	28⅝	15⅜		7,207,620	10	Simms Petroleum	50cS.A.	July 1, 26	14,500	18⅞	19⅝	18	18⅝	— ⅛
24⅞	17	24⅞	19⅜	(sh)	4,489,887	N.P.	Sinclair Consolidated	.....	May 31, 24	54,700	20¾	22¼	20⅝	21¼	+ ½
94⅜	78¾	99½	90	$	17,852,200	$100	do pfd	$2Q	Aug. 15, 26	100	98	98	98	98	0
82½	21¾	86⅞	26⅝		23,988,590	25	Skelly Oil Co	50cQ	June 15, 26	35,400	35½	36⅞	35¼	35¾	+ ⅛
.....	.....	63¾	52⅝	(sh)	13,016,434	N.P.	S. O. California	50cQ	June 15, 26	47,800	62⅛	62¾	61⅞	63¾	+1⅝
47½	38⅜	46⅜	40½		515,109,675	25	S. O. New Jersey	25cQ	June 15, 26	37,700	43⅜	43¾	43	43⅝	+ ⅛
119	116¼	119⅜	115¼		199,972,900	100	do pfd	$1¾Q	June 15, 26	2,500	115¼	115¾	115¼	115½	+ ¼
48⅞	38⅛	41⅝	30⅛	(sh)	1,103,931	N.P.	Sun Oil	25cQ	June 15, 26	1,300	30¾	34¾	30¾	32¾	+2
6⅜	2	4¼	1	(sh)	1,121,368	N.P.	Superior Oil Corp	.....	Dec. 20, 20	6,300	1⅞	2¼	1⅞	2⅛	+ ⅛
55	42¾	56	48	$	164,450,000	$25	The Texas Co	75cQ	Mar. 31, 26	109,000	54⅞	58	54½	56½	+1¾
23¾	10⅞	19½	12⅝		8,380,340	10	Texas Pacific Coal & Oil	.....	June 30, 23	50,300	14⅝	16⅜	14⅝	15¾	+1
36⅞	30¼	39¼	30	(sh)	2,187,570	N.P.	Tide Water Oil Co	37½c	June 30, 26	1,700	30½	31½	30½	30½	0
101	99	103	90	$	20,672,900	$100	do 5% pfd	$1.25Q	Aug. 15, 26	500	92½	92½	92½	92⅛	— ⅜
5⅜	3¼	5½	3	(sh)	3,742,029	N.P.	Transcontinental Oil	.....	.....	26,300	4½	4¾	4⅜	4½	— ¼
48⅜	33	58	37¼	$	40,480,800	$25	Union Oil of California	50cQ	Aug. 10, 26	22,600	53	55⅜	52¾	53	+ ⅜
134	96¼	102	80		24,423,300	100	Union Tank Car Co	$1½Q	Sept. 1, 26	6,400	102⅝	113	102½	113	+11
117⅜	113¼	118	113¾		12,000,000	100	do pfd	$1¾Q	Sept. 1 26	100	116½	116½	116½	116½	+ ⅜
31¾	25½	29¼	25⅛	(sh)	490,000	N.P.	White Eagle Oil & Refining	50cQ	July 20, 26	4,300	25⅞	27	25⅞	26½	— ½

*New High †New Low xEx-dividend Total Sales 784,400

Pittsburgh Stock Exchange

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions Week Ended Sept. 3 Sales	First	High	Low	Last	Ch'ge
.....	.....	6⅝	6⅝	N.P.	Andes Petroleum	.....	.....	.....	.....	.....	.....
8¼	5¼	7	5¾	$10	Arkansas Nat. Gas	1,475	5⅞	6⅜	5⅞	6	+ ⅛
.....	.....	81	79¾	....	Columbia Gas (w.i.)	.....	.....	.....	.....	.....	.....
.....	.....	96¼	95	$100	Col. Gas& El.pfd w.i.	.....	.....	.....	.....	.....	.....
18	14½	17	12½	$10	Devonian Oil	400	16⅞	17	16⅞	16⅞	0
112⅝	105¾	115½	112	$100	Duquesne Lt. 7s pfd	.....	.....	.....	.....	.....	.....
.....	.....	10	5½	N.P.	HoustonGulfGas(w.i.)	800	6⅝	6⅝	6½	6⅝	0
.....	.....	42½	30	25	Lone Star Gas Corp	4,286	38¾	39	38½	38½	— ¼
.....	.....	.....	.....	....	Lone Star Gas rights	.....	.....	.....	.....	.....	.....
37¼	31	48½	33¾	25	Ohio Fuel Corp	8,489	41⅝	42¼	41⅝	42⅛	— ⅛
.....	.....	5	5	....	Ohio Oil & Gas	.....	.....	.....	.....	.....	.....
34	26	34	28	25	Oklahoma Nat. Gas	1,983	28½	28⅝	28¼	28½	0
8¾	5	5⅝	3¼	5	Pittsburgh O. & G	.....	.....	.....	.....	.....	.....
9⅜	6	10	8	10	Salt Creek Cons	300	8¾	8¾	8¾	8¾	0
18¾	8½	14½	8	10	Tidal Osage	400	12	*14½	12	14	+2
.....	.....	42½	40¾	N.P.	*Waverly Oil Wks	260	42	*42½	42	42½	0

**Buyers' option, 30 days

Pittsburgh Curb Market

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions Week Ended Sept. 3 Sales	First	High	Low	Last	Ch'ge
2½	.60	3⅜	2¼	$ 5	Colombia Synd	.....	.....	.....	.....	.....	.....
.60	.15	.15	.15	5	Duquesne Oil	.....	.....	.....	.....	.....	.....
9	5½	.....	.....	10	Forest Oil	.....	.....	.....	.....	.....	.....
92⅜	64	91½	85	25	Gulf Oil Corp	.....	.....	.....	.....	.....	.....
12½	3¼	12	7½	N.P.	Leonard Oil & Dvlp	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	....	LoneStar rights (w.i.)	.....	.....	.....	.....	.....	.....
.....	.....	1¾	1¾	N.P.	Mountain & Gulf	.....	.....	.....	.....	.....	.....
2¾	1⅜	.....	.....	1	Oklahoma Eastern	.....	.....	.....	.....	.....	.....
.47	.20	.35	.15	10	Omar O. & G	600	.35	.35	.35	.35	0
.....	.....	2	1¾	5	Pittsburgh Oil Dev	.....	.....	.....	.....	.....	.....
27½	25	33½	26	10	Plymouth Oil	900	31	31	31	31	0
7	3	5½	3	5	States Oil	.....	.....	.....	.....	.....	.....
4	1⅞	3½	2¾	$ 1	Texon Oil & Land	400	3	3¼	3	3¼	+ ⅛
11	9	12	8	10	TidalOsage(non-voting)	200	12	*12	11¾	12	0

*New High †New Low xEx Dividend ‡Ex-Rights

NEW YORK BONDS

Week Ending Sept. 3

	High	Low	Last	Ch'ge
Amer. Rep. Dep. 6s	99⅞	99⅞	99⅞	0
Associated Oil gold 6s	103	102¾	103	+ ¾
Atlantic Refg. deb 5s	101½	101¼	101¼	0
Barnsdall Corp. 6s	100	97¼	99½	+2½
Cal. Petrol sf 6½s	103¾	103½	103⅝	— ⅛
Empire Gas&Fuel7½s	103⅛	103	103	0
Empire Gas&Fuel 6½s	97½	97	97⅛	— ¼
Gen. Asphalt 6s	108½	108½	108½	+ ½
Gen. Petroleum 5s	110⅜	110⅛	110¼	+ ⅛
Humble Oil&Refg.5½s	102½	102	102	— ⅜
Mid-Cont. Pet. 6½s	104½	104⅛	104⅜	+ ⅛
Pan-Amer.P.& T. 7s	105¾	105⅞	105⅜	0
Pan-Amer.P.& T. 6s	106¾	106	106¾	+ ¼
Sinclair Con.Oil Col.7s	99½	99⅛	99¼	— ⅛
SinclairCon.OilCon.6½	93	92	93	+ ½
Sinclair Con. 2 6s	105	103⅝	104⅛	+ ⅛
Sinclair Crude Oil 6s	101⅛	100⅞	101	— ⅛
Sinc. Pipe Line sf 5s	92¼	91½	92¼	+ ⅛
Skelly Oil 6½s	147⅛	142¾	145⅛	+1⅝
Superior Oil 7s	95	95	95	0
Union Oil of Cal. 6s-A	108¼	107¾	108¼	+ ¼
Union Oil of Cal. 5s-C	98¾	98⅛	98¾	+ ⅜

NEW YORK CURB BONDS

Week Ending Sept. 3

	High	Low	Last	Ch'ge
Cities Serv. 6s'66	93¼	93	93¼	0
Cities Serv.7s "D" '66	112⅝	112	112½	+ ⅛
Galena S O 7s '30	93¼	92½	92½	+ ⅜
General Pet. 6s'28	101½	101¼	101½	+ ⅜
Gulf Oil 5s '37	100¾	100⅝	100¾	0
Gulf Oil 5½s '27	100⅛	100⅛	100⅛	— ⅜
Indepen. Oil 6½s '31	96½	96⅜	96⅜	— ⅛
Pan Amer.Pet.6s'40	102½	102¼	102½	— ⅛
Pure Oil 6½s '33	103¼	103⅛	103¼	— ⅛
S O N Y 6½s'33	106	105½	105½	— ½
Sun Oil 5½s '39	99⅝	99½	99½	— ⅛
Tidal Osage 7s '31	104⅝	104¼	104⅝	0
Trans. Cont.Oil 7s'30	97½	97½	97½	0

Standard Oil Stock Traded in New York Curb Market

1925 High	1925 Low	1926 High	1926 Low		Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Sept. 3 Sales	First	High	Low	Last	Ch'ge
26¾	17¼	19¾	16¾	£	4,000,000	£1	Anglo American	60¾cS.A.	May 27, 26	1,900	18⅝	18⅝	18⅛	18⅛	— ⅛
.....	.....	18¼	16½		.....	£1	do ctfs non votg	.....	.....	1,000	18	18⅛	17⅜	17¾	0
4¼	1⅜	2¼	1⅜	(sh)	500,000	N.P.	Atlantic Lobos	.....	.....	300	1½	1⅝	1½	1⅝	+ ⅛
12¾	3	5	3¼	$	10,000,000	$10	do pfd	.....	.....	200	4⅛	4⅛	3¾	3¾	—1¼
240	205	295	226		1,000,000	100	Borne Scrymser	$4S.A.	Apr. 15, 26	30	279	285	279	285	0
72	53½	59½	46¼		10,000,000	50	Buckeye Pipe Line	$1Q	June 15, 26	400	47¼	47¼	†46¼	46½	— ¾
74	48½	75¼	65		3,000,000	25	Chesebrough Mfg	75cQ	June 30, 26	.....	.....	.....	.....	.....	.....
115	110	.....	.....		1,000,000	100	do pfd	$1¾Q	June 30, 26	.....	.....	.....	.....	.....	.....
31½	21⅜	25⅝	19½		34,914,280	10	Continental Oil	25cQ	June 15, 26	7,300	20½	21¼	20⅝	21	+ ½
17½	10	17	15½		1,500,000	25	Crescent Pipe Line	.....	Sept. 15, 23	.....	.....	.....	.....	.....	.....
156	132	137	107½		3,000,000	100	Cumberland Pipe Line	$3Q	June 15, 26	80	110	110	108½	109	—5
96	61	63¾	47¾		5,000,000	100	Eureka Pipe Line	$1Q	Aug. 2, 26	300	49	49	49	49	0
68½	28½	32½	17		16,000,000	100	Galena Signal Oil	.....	June 30, 25	300	19	19	18	19	—1
105	88	94½	65		4,000,000	100	do new pfd	$2Q	June 30, 26	150	68	72	68	72	+2
114	95	97½	66		2,000,000	100	do old pfd	$2Q	June 30, 26	140	72	72	70¼	70¼	—1¾
95	42¼	68¼	53½		72,916,650	25	Humble Oil & Refining	30cQ	July 1, 26	14,200	60⅜	62⅛	60⅛	61⅞	+1⅞
154½	127	144½	131		20,000,000	100	Illinois Pipe Line	$6S.A.	June 30, 26	380	134½	134½	134	134	— ½
39¼	27¼	38¾	31½	sh	6,491,852	N P	Imperial of Canada	25cQ	Sept. 1, 26	7,800	37⅛	37⅜	36¾	37	— ⅛
84	57⅛	70	58	$	5,000,000	50	Indiana Pipe Line	$1Q	Aug. 14, 26	200	59	59	58½	58½	— ½
35⅜	22⅛	35¼	28¾	sh	7,118,138	N P	International Petroleum	25cS.A.	Aug. 15, 26	12,100	34	34⅝	33¾	34⅜	+ ¼
25¾	16¼	20⅝	13⅜	$	6,362,500	$12½	National Transit	25cS.A.	June 15, 26	900	14⅛	14¼	14⅛	14⅛	0
79	49¼	51½	33¼		5,000,000	100	New York Transit	$1¼Q	July 15, 26	50	35	35	35	35	+ ⅛
88	67½	80½	68		4,000,000	100	Northern Pipe Line	$8S.A.	July 1, 26	100	74	74	73	73	— ½
75¼	60¼	67⅜	55¾		60,000,000	25	Ohio Oil Co	50cQ	June 30, 26	7,400	58¼	63¼	57	63¼	+6¼
44½	19	24¾	15		10,000,000	25	Penn Mex Fuel	.....	May 21, 25	.....	.....	.....	.....	.....	.....
65½	45⅞	60¼	48		60,000,000	25	Prairie Oil & Gas	50cQ	Aug. 31, 26	20,200	51⅛	54	51	53⅜	+2⅛
129¾	106	127½	122½		81,000,000	100	Prairie Pipe Line	$2Q	July 31, 26	750	124¾	125	124½	125	+ ¼
254	200	220	184½		4,000,000	100	Solar Refining Co	$5S.A.	June 19, 26	70	205	206	205	206	+1
103	63	74½	24¾		10,000,000	100	Southern Pipe Line Co	$1Q	Mar. 1, 26	600	24⅞	25⅛	†24⅞	24⅞	0
47½	45	50	34½		20,000,000	25	South Penn Oil Co	37½cQ	June 30, 26	800	37	39¼	37	39	+1½
84	50	56	49		5,500,000	100	South West Pa. Pipe Line	$1Q	July 1, 26	250	52	52½	52	52	0
70¾	59½	70½	61½	$	223,756,258	$25	S. O. Indiana	62½cQ	June 15, 26	19,600	63⅝	64⅝	63½	64½	+ ¾
46	30⅛	36½	19⅛		8,000,000	25	S. O. Kansas	.....	June 16, 24	1,700	19⅝	22	19⅝	22	+2⅜
137	114¾	134¾	108		16,864,434	25	S. O. Kentucky	$1Q	June 30, 26	17,000	123	125½	122	125⅜	+3¼
270	231	275	188		4,500,000	100	S. O. Nebraska	$5S.A.	Dec. 19, 25	.....	.....	.....	.....	.....	.....
.....	.....	51¾	42		4,518,000	25	do new w.i	$1.25S.A.	June 21, 26	200	48	49	48½	49	+1
48⅝	40¼	47¼	30¾		358,102,000	25	S. O. New York	35cQ	June 15, 26	28,800	32⅜	33¼	32⅛	33¼	+ ⅜
369	338	362	290½		14,000,000	100	S. O. Ohio	$2½Q	July 1, 26	120	305	308	305	308	+2
123	116	122	117		7,000,000	100	do pfd	$1¾Q	Sept. 1, 26	20	118¼	118¼	118¼	118¼	0
27	12	23	15½		1,722,931	25	Swan-Finch Co	.....	Nov. 1, 19	.....	.....	.....	.....	.....	.....
109½	80⅛	112	95¾		61,919,950	25	Vacuum Oil Co	50cQ	June 19, 26	6,700	102¼	102¼	100⅝	101¾	+1¼

Cleveland Stock Market

Sept. 3

	Par	Bid	Asked	Last Sale
Canfield Oil Co	$100	.....	.....	107
do pfd	100	.....	95	95
Fred G. Clark Co	10	3½	3¾	3½
National Refining Co	25	37¾	39⅛	37¾
do pfd	100	130¼	.....	130¾
Paragon Refining Co	25	7½	7⅞	7¾
do pfd	100	.....	85	80

Benzol More Plentiful

NEW YORK, Sept. 6.—Shipments of motor benzol against old contracts and production are more conspicuous than new business. The full amounts asked for on contract are being taken. Though production is large, there is no tendency toward oversupply because of the ready demand. Spot supplies are fairly free, but by no means a drug on the market. The chief distributors are well sold. Coke prices are stiffening, which together with the approach of colder weather, will induce coke oven operators to speed production. During the coal strike last winter many former coal users became accustomed to coke and will turn to coke again this year. Prices have been unchanged for several weeks at 25 cents a gallon in tanks at the works, and 30 cents in drums.

LEONARD, TEX.—A new service station has been opened at Randolf, Tex., by the Magnolia Petroleum Co., Dallas. The station will be supplied by the Leonard, Tex., agency.

New York Curb Market

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions week ended Sept. 3 Sales	First	High	Low	Last	Ch'ge
11½	2½	14½	5	$ 5	Amer. Maracaibo	4,100	5⅝	6	5½	6	+ ⅛
8⅜	5	6¾	5¾	$10	Arkansas Nat. Gas	900	5⅞	6⅜	5⅞	6⅛	+ ⅜
.....	.....	19¼	14⅛	N.P.	Beacon Oil	16,600	17⅜	19¼	17	19¼	+2¼
47½	38	.....	.....	$25	British-American	.....	.....	.....	.....	.....	.....
10¼	2¾	22⅝	9¼	25c	Carib. Syndicate	3,600	15⅝	15¾	14½	14½	— 1
43	35	44¾	37½	$20	Cities Service	8,900	44½	††43¾	44⅜	44¾	+ ⅛
85⅜	80¼	89½	82⅜	100	do pfd	1,800	89	†89½	88⅞	89½	+ ½
8	7¼	7⅞	7⅜	10	do pfd. B	700	7¾	7⅞	7¾	7¾	0
21⅜	17½	22⅜	19	10	do bankers' sh	1,600	22⅛	†22⅜	22⅛	22⅜	+ ¼
2¾	.60	3½	2	N.P.	Colombia Syndicate	7,500	2⅜	2½	2⅜	2 1/16	— 1/16
15	8¼	15½	10	N.P.	Creole Syndicate	41,800	14¼	†15½	14¼	15½	+ ⅜
12¼	5	7⅜	1⅝	N.P.	Crown Central	800	2	2	2	2	0
7	2	4	1 1/16	N.P.	Derby Oil & Ref	100	3¼	3¼	3¼	3¼	0
27	10½	19	13	N.P.	do pfd	.....	.....	.....	.....	.....	.....
.....	.....	2¼	.88	.....	Euclid Oil	4,900	1 1/16	1 1/16	1 1/16	1 1/16	0
6	1⅜	7½	3⅜	N.P.	Gibson Oil	11,300	3⅜	3⅞	3⅜	3⅞	+ ¼
3¾	1⅜	2	.63	N.P.	Gilliland v.t.c	700	1½	1½	1¼	1⅜	0
98¼	63½	95	82	$25	Gulf Oil Corp	11,400	85¼	†95	85¼	95	+9⅞
5⅞	2¼	4	1½	N.P.	Kirby Petroleum	1,300	2	2	1¾	1¾	— ⅛
13	6	12¼	5¾	N.P.	Leonard Oil & Dev	4,700	7⅝	8¼	7⅜	8⅛	+ ½
25⅞	18	25¾	20	N.P.	Lion Oil Refining	2,500	21	22½	21	22½	+ ¾
.....	.....	42	31½	$25	Lone Star Gas	500	38½	38½	38	38	0
4¼	1¾	3⅜	2	N.P.	Marland of Mexico	.....	.....	.....	.....	.....	.....
5¾	.56	5½	3⅜	$10	Mexican-Panuco	32,900	3⅞	4¼	3⅞	4⅛	+ ⅛
2	1	1¾	1⅜	1	Mountain & Gulf	400	1⅜	1⅜	1⅜	1⅜	0
26¼	18⅜	26	23	10	Mountain Prod	4,200	24⅝	25⅜	24⅝	25⅜	+ ¾
6¾	3⅝	6¾	5½	5	New Bradford	800	5⅝	5¾	5⅝	5⅝	0
24¾	16¼	11¾	2	10	New England Fuel	.....	.....	.....	.....	.....	.....
19⅜	6¼	17	9⅛	1	New Mex. & Ariz	900	11⅝	12½	11½	11⅞	+ ⅜
12½	8¼	17	8	$5	New York Oil	200	10¼	10¼	10¼	10¼	— ¼
37	14	36	34¼	$5	Ohio Fuel Corp	.....	.....	.....	.....	.....	.....
.....	.....	9⅞	7¼	.....	Pandem	900	8	8	7⅝	7⅝	— ⅜
2½	.90	2¾	.50	N.P.	Peer Oil Corp	1,300	.57	.57	.52	.52	—.05
28¼	16	22¾	14½	$10	Pennok Oil	500	17⅛	17¼	17	17¼	+ ¼
44½	16	38	14⅛	$5	Red Bank Oil	2,600	32	34	30	30	—2
33½	19	28¾	14½	N.P.	Reiter-Foster	4,100	24¼	24⅝	22½	22⅞	—1⅜
.....	.....	.....	.....	$25	Richfield Oil w.i	200	26¼	26⅜	26¼	26⅜	0
9½	3½	7½	4⅝	N.P.	Ryan Consolidated	200	5½	5½	5½	5½	0
9¾	6⅛	10	8	$10	Salt Creek Cons	600	8¾	8⅞	8¾	8⅞	+ ⅛
35	24	36	28⅞	10	Salt Creek Prod	2,500	30⅝	31⅝	30⅝	30¾	+ ⅛
3⅞	1	4	1⅜	5	Savoy Oil	.....	.....	.....	.....	.....	.....
13¾	9	14¼	7⅝	10	Tidal Osage	7,400	11¾	†14¼	11¾	14¼	+2½
10⅞	8	12½	8¼	10	do non-voting	7,500	9½	†12½	9½	12½	+3¼
.....	.....	27	21	N.P.	Tide Water Assoc	6,100	24½	24¾	24⅜	24⅝	+ ⅛
.....	.....	99¼	97½	100	" " " pfd	100	97½	97½	97½	97½	0
4⅞	1¾	8	4¼	5	Venezuelan Pet	11,300	6¼	6⅞	6¼	6¾	+ ¼
.....	.....	29¾	23½	N.P.	Warner-Quinlan w.i	800	28	28½	28	28½	+ ½
31¼	22⅛	36⅜	22	N.P.	Wilcox O. & G. new	500	29¾	30⅛	29¾	30	+ ⅛
7	3⅞	9	4⅜	N.P.	Woodley Petroleum	5,600	6	† 9	6	8¾	—1¾

*New High †New Low xEx-Dividend.

California Company Sets 4½-Inch at 8,049 Feet

Staff Special

CLEVELAND, Sept. 7.—If it were laid horizontally, on the surface of the earth, it would be called a pipe line more than one and one-half miles long. As it is, it will be known as the longest string of casing ever run into a well, for the well itself has broken all records for deep drilling. At a total depth of 8049 feet, where a slight showing of oil was had, the Chanslor-Canfield Midway Oil Co. is running a string of 4½ inch casing in its Olinda No. 96 well, in Orange county, California. This is in 8-3S-9W and is about eight miles north of Fullerton.

The previous last string of casing was 5595 feet of 6¼-inch 26 pounds and from there to present depth was open hole. This well was drilled its entire distance with rotary, using 100 horse power drilling motor and two 50 h.p. motors on two 6¾-12 slush pumps.

The well was spudded in on March 13, 1925.

The company called upon Alexander Anderson, inventor of an electro-photographic instrument for surveying wells, to take frequent "pictures" of the hole as it was drilled. It was found that at about 5985 feet there had been a drift from the vertical of 560 feet, at which point the hole started to drill back to where it would be had it been in plumb all the way. At 7000 feet the melting point of the instrument—212 degrees—was reached and further surveys could not be made. Presumably it is much hotter at the present bottom of the hole.

When the 4½-inch is set, drilling will be resumed, although original plans were for a limit of 8000 feet.

BARABOO, WIS.—This town boasts four new filling stations handling three different oil companies' products. One has recently been completed by Berkley Oil Co. and one by Willey & Berkley, handling Pure Oil Co.'s products.

One was recently opened by Philbrick & Feinburg, handling products of the Standard Oil Co. of Indiana.

The blacksmith shop of A. J. Koepp has been transformed into a gasoline service station, handling Sinclair products.

AMARILLO.—Clifton D. Hinton, known to all the producing fraternity as "Skeet," is now Panhandle representative for the Williamsport Wire Rope Co., and is making his headquarters in Amarillo. He was transferred from the Dallas office after having put in several years in the Smackover-Eldorado district in Arkansas.

BELLOWS FALLS, VT.—The C. & O. Oil Co., oil jobber here, is installing 96,000 gallons storage for gasoline at St. Johnsbury, Vt.

THE OIL INDUSTRY EXCHANGE

Positions Wanted

Young Man, Married, with six years' experience in oil industry as salesman, bulk station manager and chemist desires new connection, where opportunities are limited by ability only. Available at once. Best references. Box 688.

Experienced Salesman desires new connection. Broad experience in Bulk and Service Station, Operation and Construction. Address Box 690 Care of National Petroleum News.

Situations Open

Mid-Continent refiner and marketer is interested in an executive organizer capable of systematizing the general organization controls with special emphasis on the corelation between the various departments.

Position worth while to the right man. Give complete history of experience and salary desired. All correspondence held in strictest confidence.

Box 692, National Petroleum News, Cleveland, Ohio.

Business Opportunities

OLD ESTABLISHED important ENGLISH FIRM of IMPORTING AGENTS and BROKERS with SALES-ORGANIZATION covering merchant trade connections over GREAT BRITAIN are open to consider AGENCY REPRESENTATION of important AMERICAN REFINERY for LUBRICATING OILS —also other PETROLEUM PRODUCTS SPECIALTIES.
Address: "LONDON".
Care National Petroleum News,
342 Madison Ave., New York City.

AGENT WANTED IN CALIFORNIA

Export firm with offices in New York and principal parts of the Orient, desires Agent or an experienced Oil Man in Los Angeles or San Pedro to handle exports of Crude and Refined Products from Pacific Coast.

Must be thoroughly experienced in the Coastal Oil Trade. State references and particulars.

Box 691, care National Petroleum News.

Wanted—To Buy

Bookkeeping Machine Wanted, Elliott-Fisher Bookkeeping Machine in good condition. Advise type, year purchased, etc., Columbia Oil Co. Inc., Rosslyn, Va.

FILLING STATION AND BULK STORAGE WANTED

in desirable location, doing 200,000 gallons or over yearly. State price and full particulars in first letter. Box 689, care National Petroleum News.

For Sale

For Sale at a Bargain—2500 Bbl. Skimming plant complete. Also, two Blaisdell Cracking units in excellent condition. Will sell complete or in part. Anyone needing stills, condensers, towers, boiler, tanks or pipe write Box 1088, Little Rock, Ark.

Six Oil and Gasoline Riveted Tanks

One Bowser round gasoline tank 8,000 gallons. Two Bowser square oil tanks 8,000 gallons each. One Bowser square oil tank 10,000 gallons. Two round oil tanks 8,000 gallons each. Will sacrifice all for $1250. F. O. B. Detroit.
Rudelic Coal,
17139 Swift Ave.,
Detroit, Mich.

Sulphurized Animal Cutting Oil Base For Sale

Heavy consistency, 4c per pound. Also, black recovered lard oil and neatsfoot oil, mixed tank cars and barrels. Also, black vegetable greases for gear and fibre greases 3c per pound. Acme Oil Corp., 189 N. Clark St., Chicago, Ill.

BULK PLANT and SERVICE STATIONS

Located 25 miles out of Cleveland. Gallonage one million per year.
Box 673.

20 TONS POWDERED GRAPHITE FOR SALE

2c Per Pound. Excellent for Manufacture of Graphite Greases. Acme Oil Corp., 189 N. Clark St., Chicago, Ill.

PUMPS
New and Slightly Used

We have the following refinery pumps for sale at a great saving. Some are new —the balance used but a short time. They can be inspected at our plant.

3—Wilson - Snyder Vertical, Size 14x9x24

4—Dean Bros. Vertical, Size 10x12x24

1—Dean Bros. Horizontal, Size 10x12x14x12

Will sell in a lot or singly.
GRAVER CORPORATION
East Chicago, Indiana

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